Public works

CITY GOVERNMENT.

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IT WILL BE A GREAT CONVENTION.

Second Annual Meeting of the League of American Municipalities at Detroit.

Attendance Will Be Very Large.—An Excellent Programme Arranged.

The greatest convention of city officials that ever gathered in any country will be held at Detroit during the first week in August. This convention will not only be great in attendance, but great in interest and results. For some years the American people have shown an increasing interest in muncipal government and hundreds of local organizations have been formed for the purpose of improving civic affairs, but unfortunately these clubs and associations have not accomplished reforms commensurate with the work they have performed. The failure of local reform organizations is due chiefly to the fact that their actions have been too frequently dominated by politicians whose sinister aims have driven them from their regular party organizations into selfishly independent politics and partly to the fact that their work has been sometimes carried on by business and professional men who, although thoroughly capable in their respective callings, lacked the experience in municipal affairs which is indispensable in devising and putting into effect improved methods of public service. Taking into consideration that a knowledge of the details involved in the administration of municipal departmental work and of the complex conditions and obstacles that must be encountered in the work is the most valuable faculty one can possess in forming new and improved methods for carrying on the civic service, it is obvious that true reform in this most important branch of social life can best be produced by those who have served or are serving in official positions. It was not until last year that the city officials of this country instituted a concerted national movement to secure practical reform in municipal matters. The seeming tardiness in starting this work was not the fault of the officials, as was shown by their readiness to join the movement as soon as it was initiated. All great movements for the public weal must start from some single and particular point. CITY GOVERNMENT has the proud distinction of being the starting point of the League of American Municipalities. It was this paper that first suggested and vigorously promoted to a successful issue the national convention of mayors and councilmen, held at Columbus, Ohio, last year, the result of which was the organization of the League of American Municipalities.

It has been demonstrated by the proceedings of the Columbus convention and the work of the League since then that a national organization for the interchange of ideas, knowledge and experience between the officials of municipalities throughout the country is mutually beneficial to all concerned and forms the most potent method possible for improving the civic service. This demonstration has brought into the membership of the League most of the leading cities of the country and many of the small municipalities, making the success of the organization greater than was anticipated by its projectors. The second convention of the League, to be held at Detroit the first four days of August, will bring together for a most exalted purpose over a thousand mayors and council members, representing cities in nearly every state in the Union and in Canada, and directly representing not thousands, but millions of citizens.

The secretary of the League has already received advices that show that the attendance at the Detroit meeting will be more than double that at Columbus last year. Cities that sent only two or three delegates last year have made arrangements to send either double the number of

SAMUEL L. BLACK, TREASURER.

C. A. COLLIER, VICE-PRESIDENT.

JOHN MAC VICAR, PRESIDENT.

PRINCIPAL OFFICERS OF THE LEAGUE OF AMERICAN MUNICIPALITIES.

delegates or the entire council to the Detroit convention. The great city of New York will be represented by not less than fifty of its officials, and all of the other large cities will have delegations proportionately as strong. The smaller cities and towns of the country will also be liberally represented, because the framers of the constitution of the League had the good judgment to give to the small municipalities the same rights and privileges, as members, as are enjoyed by the great cities.

ENTERTAINMENTS GALORE.

For several months the city council of Detroit has had a special committee at work on arrangements for this convention, and this committee has been reinforced recently by the appointment of local committees on reception, hotels, entertainment, press, exposition and finance, made up of the leading citizens of Detroit. These committees have taken up their work enthusiastically, and will be prepared to give their visitors a most enjoyable time. Something over $10,000 has already been raised for the entertainment features of the convention, which include a trip to beautiful Belle Isle, with lunch and liquid refreshments, a boat ride up the Detroit river and a trolley ride to and lunch at the water works pumping station. Many other entertainments will be arranged before the convention opens. To augment the series of entertainments arranged by local committees, nearly every secret society in Detroit will keep open house for their visiting brothers. Some months ago the Detroit park commissioners made a special appropriation of $2,000 for placing floral designs in the parks appropriate to the convention of the League of American Municipalities. Every night during the convention the city hall will be decorated profusely with vari-colored electric lights.

RICHARD H. RYDER,
Council, Pawtucket, R. I.

WILLIAM C. BAKER,
Mayor, Providence, R. I.

W. G. SICKEL,
Mayor, Trenton, N. J.

PROMINENT DELEGATES TO THE DETROIT CONVENTION.

PROGRAMME OF THE CONVENTION.

The convention programme, as arranged at this writing, is as follows:

MONDAY, AUGUST 1.

10 A. M.—Address of Welcome—Hazen S. Pingree, Governor of Michigan.
Address of Welcome—William C. Maybury, Mayor of Detroit.
Response—John MacVicar, President League of American Municipalities.
2 P. M.—Reports of Officers.
Topic:
Garbage Disposal—What has been the experience of municipalities in attempting to collect and dispose of garbage in a sanitary and economical manner? Are the present utilization and incineration inventions satisfactory, and what does it cost to operate them?
Addresses by:
Dr. Quitman Kohnke, Member Council and Board of Health, New Orleans, La.
Hon. F. A. Walker, President Council, Trenton, N. J.
General discussion.
4 P. M.—Entertainment.
8 P. M.—Topic:
The Civil Service—What results have been attained by requiring applicants for positions in city departments to pass an examination and making their tenure of office dependent on good behavior and mental and physical ability? To what departments should civil service laws apply?
Addresses by:
Hon. Charles P. Weaver, Mayor, Louisville, Ky.
Hon. David S. Rose, Mayor, Milwaukee, Wis.
Hon. A. R. Kiefer, Mayor, St. Paul, Minn.
General discussion.
Address—"The Relation of Municipalities to Organized Labor," by Hon. James A. Lavery, Member Council and President Labor Federation of the State of New York, Poughkeepsie, N. Y.

TUESDAY, AUGUST 2.

10 A.M.—Topic:
Boards, Single-Headed Commissions or Council Committees—Should the administrative affairs of the departments of public works, water, fire, police, parks, charities and correction be conducted by boards, single-headed commissions or council committees?
Addresses by:
Hon. W. E. Young, Mayor, Akron, O.
Hon. H. A. Collings, Member Council, Holyoke, Mass.
Hon. L. M. Rand, Member Council, Minneapolis, Minn.
Hon. F. V. Evans, Mayor, Birmingham, Ala.
General discussion.
2 P. M.—Topic:
Regulation of Saloons—What policy is best to use in enforcing the laws pertaining to saloons?
Addresses by:
Hon. Robert Pratt, Mayor, Minneapolis, Minn.
Hon. F. B. Farnsworth, Mayor, New Haven, Conn.
Hon. George R. Perry, Mayor, Grand Rapids, Mich.
General discussion.
Topic:
Street Paving—What are the relative merits and cost of various paving materials?
Addresses by:
Hon. R. J. Saltsman, Mayor, Erie, Pa.
Hon. Thomas Taggart, Mayor, Indianapolis, Ind.
General discussion.
Evening—Entertainment.

WEDNESDAY, AUGUST 3.

10 A. M.—Topic:

Remuneration to Cities for Franchise Rights In, Over and Under Public Streets and Alleys—What remuneration, if any, should be exacted from light, water, street railway, telephone and subway corporations and how should it be collected?

Addresses by:

Hon. James D. Phelan, Mayor, San Francisco, Cal.
Hon. T. S. McMurray, Mayor, Denver, Col.
Hon. Edward Hoos, Mayor, Jersey City, N. J.

General discussion.

Afternoon—Entertainment.

8 P. M.—Topic:

Municipal Ownership of Public Service Industries—What progress has been made in this line in the United States and Canada and with what results? What should be its limitations?

Addresses by:

Hon. Samuel M. Jones, Mayor, Toledo, O.
Hon. W. C. Flower, Mayor, New Orleans, La.
Hon. F. G. Pierce, Mayor, Marshalltown, Ia.
Hon. J. A. Johnson, Mayor, Fargo, N. D.

General discussion.

THURSDAY, AUGUST 4.

10 A. M.—Topic:

Public Water Supplies—What means should a municipality employ to supply its people with an ample supply of pure water at equitable rates? Is the general use of meters desirable? What systems of filtration are satisfactory?

Addresses by:

Hon. James K. McGuire, Mayor, Syracuse, N. Y.
Hon. George Hillyer, Pres. Water Board, Atlanta, Ga.
Hon. M. H. Levagood, Mayor, Elyria, O.

General discussion.

2 P. M.—Election of Officers.

Election of Next Meeting Place.

Evening—Entertainment.

On the above programme will be found the names of many of the brightest men in municipal office, and more than a few of them are orators of ability and reputation.

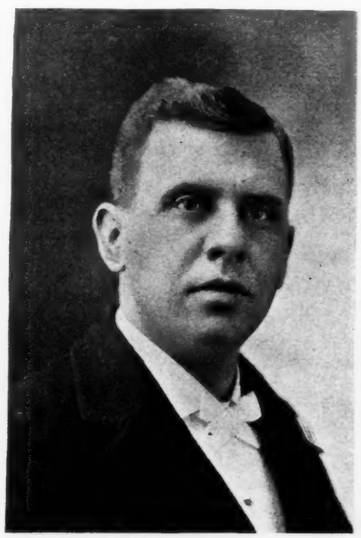
RAILROAD RATES AND ARRANGEMENTS.

Railroads within the territory of the Michigan Passenger Association have made a rate of one fare for round trip, and all other railroads throughout the country have made a special rate of one fare and a third for the round trip. In order to secure this reduced rate it is necessary for visitors and delegates to the convention to state to the ticket agent from whom they purchase the going ticket, that they are to attend the convention of the League of American Municipalities at Detroit, take a receipt for the going fare and secure a certificate which will entitle them to a one-third rate on the returning ticket. These certificates must be presented to the secretary of the convention, to be signed by him and the agent of the traffic association at Detroit, after which they are returned to their owners, who must present them at the ticket office at Detroit to secure a one-third rate on the returning ticket.

All city officials, manufacturers and others who propose to attend the Detroit convention can have a most enjoyable trip by joining the special party which will leave New York Saturday evening, July 30, at 6 o'clock, via New York Central Railroad, and reach Niagara Falls at 7.18 Sunday morning. The party will be the guests of the City of Niagara Falls during the day, and will leave there at 4.32 Sunday afternoon and reach Detroit at 11.10 Sunday night. New England delegates will find it convenient to join this party at Albany. Berths may be reserved on this train, from New York to Niagara Falls, by addressing M. C. Roach, New York Central Railroad, 413 Broadway, New York city.

The Detroit Auditorium, adjoining the convention hall, has been engaged for the exposition adjunct of the convention. It is a splendid building for this purpose, being conveniently located and well arranged for the purposes of an exposition. Nearly all of the leading manufacturers of municipal supplies have already engaged space and the exhibits will be as numerous as they are interesting. With mayors, councilmen and heads of municipal departments from all sections of the country gathered together, as they will be at Detroit, the opportunity is an exceptional one for the manufacturers to show their products to advantage. On the other hand, the officials find the exposition adjunct one of the most valuable features of the convention, as it enables them to examine many devices for the municipal service which are new and of especial interest to them. Among the many things to be exhibited are electric, gas and gasoline street lamps, voting machines, garbage disposal systems, fire and police telegraph apparatus, fire department apparatus and supplies, street sweepers and sprinklers, sewer construction materials, catch-basins, hydrants, water department supplies, road rollers, gully cleaners, paving materials, electrical supplies, street cleaning devices, park fountains and benches, water filters, garbage wagons, etc.

JAMES D. PHELAN,
Mayor, San Francisco, Cal.



H. A. COLLINGS,
Council, Holyoke, Mass.

J. A. JOHNSON,
Mayor, Fargo, N. D.

PROMINENT DELEGATES TO THE DETROIT CONVENTION.

NOTES ON THE CONVENTION.

Mayor Perry and the whole council of Grand Rapids, Mich., will attend. They have already engaged their quarters at Detroit.

The CITY GOVERNMENT staff at the convention will include B. F. Gilkison, C. E. Stump, H. J. Gonden, A. W. Collier and Walter Mould. With such a representation, this paper ought to secure a pretty good report of the proceedings and incidents.

Councilman Louis Kuehner, of Louisville, was a caller at the CITY GOVERNMENT office last week. He says Louisville will have a large delegation at Detroit.

Judge George Hillyer, president of the water board, will be with the big delegation from Atlanta, Ga. Judge Hillyer is one of the best posted men on public water supplies in this country.

Mayor Higgins, of Oswego, N. Y., will be a prominent figure at the convention.

There will be a good sized delegation from the Lincoln, Neb., council.

New Orleans will be represented by Mayor Flower and a large councilmanic delegation.

Judge Rand, the Minneapolis alderman, who nominated St. Paul for the next convention seat at the last meeting, will doubtless be at Detroit. Minneapolis, by the way, is expected to send a big delegation headed by Mayor Pratt.

Holyoke, Mass., will send a delegation of seven, headed by Mayor Connors.

The New York city delegation will be a very large one and their presence will doubtless help materially to enliven the proceedings.

Mayor Phelan, of San Francisco, has promised to attend if he can possibly arrange his affairs so as to make the long journey. As the mayor is a man who always does whatever he attempts, it is dollars to doughnuts that he will be present when the roll is called.

Mayor McMurray, of Denver, will be on hand, despite the long trip he will have to make.

Several cities in far-off Maine will be represented.

President MacVicar will have with him a good-sized delegation from the Des Moines council.

Alderman Frank Matty, who will be in the Syracuse delegation, is one of the best known and most successful politicians in New York state.

GEORGE L. BURTON,
Council, New Haven, Ct.

CHARLES P. WEAVER,
Mayor, Louisville, Ky.

F. B. FARNSWORTH,
Mayor, New Haven, Ct.

PROMINENT DELEGATES TO THE DETROIT CONVENTION.

Syracuse, N. Y., will be represented by Mayor McGuire, Aldermen Matty, Mack, Freeman, Flannery, Rice, Costello, Lincoln, Regan, McLaughlin, Saldan, Blint and others. Syracuse will be out for the 1899 convention.

The council of St. Joseph, Mo., has decided to attend the convention in a body. With the mayor and other city officials, this will make a delegation of about twenty-five.

Nashville, Tenn., will have a good delegation present, headed by Mayor Dudley.

Wilmington, Del., had the largest delegation at the Columbus convention, and as a reward carried home the big golden key to the Ohio capital. Wilmington will now send a big party to the Detroit meeting.

Mayor Hastings, of Niagara Falls, will not be alone this time. He will have his whole council and a number of leading business men with him and their intention is to capture the 1899 convention.

Vice-President Ryder, of Rhode Island, reports that Pawtucket will send quite a delegation of councilmen.

Among the New England cities that will be represented at the convention are New Haven, Bridgeport, Hartford, Stamford, Springfield, New Bedford, Holyoke, Worcester, Everett, Providence, Pawtucket and Central Falls.

Mayor Carter H. Harrison, of Chicago, expects to be present with a delegation of aldermen from his city.

Mayor James K. McGuire, of Syracuse, although only about thirty years of age, is one of the greatest orators in the Empire state. He will be one of the most entertaining speakers at the convention.

Mayor Thomas Taggart and a party of aldermen will be on hand to represent Indianapolis.

A large number of cities in the South have already made arrangements to be represented at the convention. It will be remembered that the southern contingent was very large at Columbus last year, but it will be larger at Detroit.

DETROIT: THE CONVENTION CITY.

In the galaxy of American cities, Detroit stands pre-eminently as the one whose history is closest interwoven with that of the great Northwest. Here the French traveler and explorer, Antoine de la Mothe Cadillac, planted the Roman cross and unfurled the flag of "la belle France." It is beyond the compass of this article to enter into historic detail Suffice it therefore, to say that where one hundred and seventy-seven years ago the little French trading post was located there are to-day stately spires and the palaces of commerce of the metropolis of Michigan, a center of activity, of culture, of wealth, and great natural resources, standing in the front rank of the modern cities of the world.

MAYOR WILLIAM C. MAYBURY.

During the past decade, Detroit has unconsciously made for herself the name of Convention City, until to day that name is applied to her by national bodies as they seek out available places for holding coming meetings. Beautiful Detroit is a place of pleasure, a place of rest, a metropolitan winter and summer resort, fall and spring pleasure retreat; located in the center of where people start from and just at the point where they want to go to; the gateway to all inland places of interest, and of itself the most attractive city on the American continent. Located in a half-day's ride of one-fourth of the people of these United States, on leading trunk lines, both North and South, East and West, Detroit is easy of access, and conventions here always have a large attendance. Situated on the great Detroit river, where more tonnage passes than at any other point in the world, she is contiguous to all the large cities of the unsalted seas and within easy reach of all the beautiful resorts, hunting and fishing grounds and the happy nooks where pleasure always abounds. Locally, many things go to make the convention life of bodies meeting in Detroit happy.

CLIMATE.

One of the strongest points of beautiful Detroit is her climate; always pleasant, always healthy and always enjoyable. Gentle breezes, passing from lake to lake, loiter at her door. Convention visitors from all parts of the world, who have sweltered or frozen at annual gatherings elsewhere, go home with a delightful memory of the "grand weather of Detroit."

Look at the normal temperature for the summer months, as furnished by Supt. Conger, of the United States Bureau, from 1871 to 1898, and find another city where the mercury is so accommodating:

	Normal Temperature.	Minimum Temperature.
May	57.5	29
June	67.9	38
July	71.6	48
August	69.7	45
September	62.9	30

HOTEL ACCOMMODATIONS.

One of the strongest points of the Convention City, the one that has done so much toward making her famous, is the numerous large, modern hostelries. Here the hundreds and thousands of visitors are made at home, well fed and cared for by the accommodating landlords, who love to aid in making meetings successful. If there is another city in the country as large as Detroit having as many fine hotels, it has never been discovered.

The down-town houses, of which there are a score or more, can accommodate several thousands, and on electric car lines are accommodations for 10,000 strangers in high-class hotels, an advantage which no other city can offer. As an instance of the ability of the Convention City, 50,000 strangers have been cared for, well and good, at one time, without overcrowding. The location of any hotel is easy to find, as Detroiters take pleasure in making strangers feel at home. Rates are never raised, no matter how large the crowd. The Hotel Cadillac is a magnificent structure, with every modern convenience and a management that makes it one of the best stopping places in the United States. The Cadillac rates for the league convention are: Rooms without bath, $3 to $3.50; rooms with bath, $3.50 to $5 per day; the hotel is conducted strictly on the American plan. The Russell House is situated on the Campus Martius, opposite the City Hall, and is a splendid hotel in every respect, with rates of $3 to $5 per day.

HOTEL CADILLAC.

THE PUBLIC PARKS.

Detroit is proud of her parks, and she has many of them, from two to eight hundred acres. Half a million dollars a year is expended in their improvement and maintenance. The "People's Playgrounds" they are

called, for many is the summer day they are visited by 100,000 people.

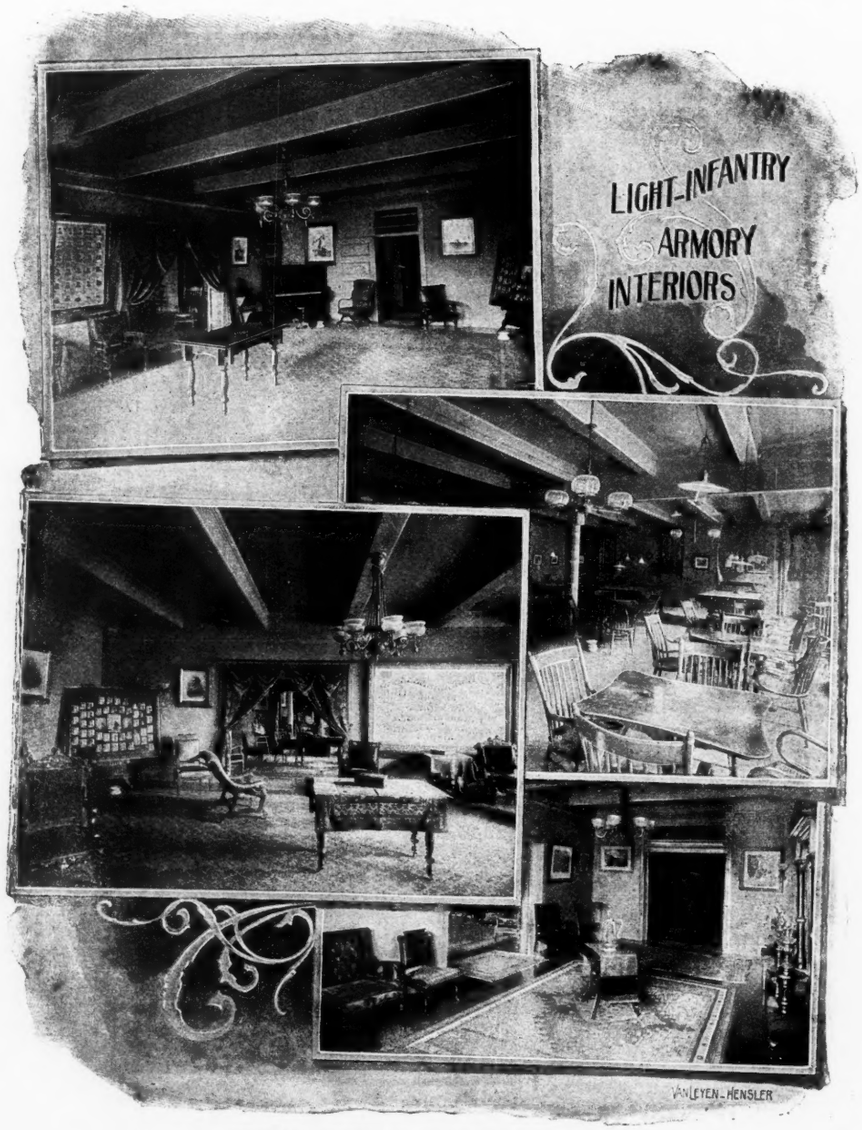
Belle Isle is the jewel of them all. Of this gem of parks, Mr. Silas Farmer, the city historiographer, writes: "This beautiful island of about 700 acres was called by the Indians Mah-na-be-zee, or the Swan. The French, from its location at the entrance of Lake St. Clair, named it Isle St. Clair, the Indian name for the lake being Otsiketa. In early days the island was infested by rattlesnakes, and partly to destroy them, and partly as a matter of convenience, the English Commissary Department placed a drove of hogs on the island, and they became so numerous that the French designated the island as Isle au Cochon, or Hog Island, and it retained its name until July, 4, 1845, when a picnic party christened it Belle Isle, in honor of the ladies of the party. Under both French and English rule it was treated as an appendage to the fort of Detroit, and during the American Revolution rebel prisoners were here employed in cutting wood. Portions of the island were cultivated prior to the Pontiac conspiracy, and during that conspiracy, on May 9, 1763, the Indians massacred the family of James Fisher, then living on the island. The earliest individual title of the island dates from 1789, when Lientenant McDougall bought it of the Chippewa and Ottawa Indians for eight barrels of rum, three rolls of tobacco, six pounds of vermillion and a belt of wampum, its value being estimated at $1,000. It was sold by the heirs of McDougall to Wm. McComb, and confirmed to him by the United States in 1809. In 1817, it was sold by the McComb heirs to B. Campau for $5,000, and in 1879, two hundred and ten years from the date of its first sale, it was sold by the heirs of Campau to the city of Detroit for $200,000, or two hundred times its first estimated value. The purchase of the island as a park was first suggested, and was successfully negotiated by Levi L. Barbour, and he richly deserves the thanks of all who enjoy its beauties. Fortunately, Detroit has had park commissioners, who by their thoughtfulness have greatly increased the original attractions of the park. The first improvements were made under the direction of the noted landscape artist, Frederick Law Olmstead, and up to 1895, there has been spent upon the park, including original costs, improvements and maintenance, upwards of $1,300,000. The bridge to the mainland was built in 1889 and cost $315,000."

Next in size to Belle Isle, and covering an area of 132 acres, is Palmer Park, the generous gift of Hon. Thomas W. Palmer. The famous log cabin is located here, and contains many relics of bygone centuries. Although the work of improvement has but recently been undertaken, Palmer Park, with the large colonial casino, music pavilion, lakes, roads and walks, is a most romantic spot.

The Convention City has a large number of smaller parks, notably Cass, Clark and Grand Circus Parks.

MUSEUM OF ART.

The Detroit Museum of Art, a magnificent stone structure, built in romanesque style, presents a frontage of one hundred feet, flanked by two towers, on Jefferson avenue, with one hundred and eighty feet on Hastings street. The entire cost of building and land, $130,000, together with its pictures and collections in the various departments, now valued at $200,000, making a total of over $325,000, is the gift of the citizens of Detroit. Through the wise and liberal action of the city government, the institution is free to the public. The average monthly attendance is nearly 9,000. Open on Sundays and Mondays from 2 to 4 P. M., all other days from 9 A. M. to 4 P. M. Convention visitors are particularly invited to make this place a visit during their stay.



INTERIOR VIEWS OF CONVENTION BUILDING.

STREET RAILWAYS.

Detroit, the Convention City, has the greatest electric railway system in the world. Hundreds of miles of electric line, reaching twenty-five miles in the country in every direction, up and down the beautiful river, and touching scores of famous resorts, make this interesting to visitors. Low fares, moderness in everything and a general aim to please, have given the Convention City her enviable street railway reputation. Trolley parties, traversing 100 miles of beautiful boulevards, streets and avenues, reaching parks and lakeside resorts, are a feature of many conventions in Detroit. To more comfortably greet these guests the Citizens' Company has constructed elegant buffet cars, furnished and equipped like a palace, and they are highly appreciated by visitors who want to take a cruise over modern Detroit.

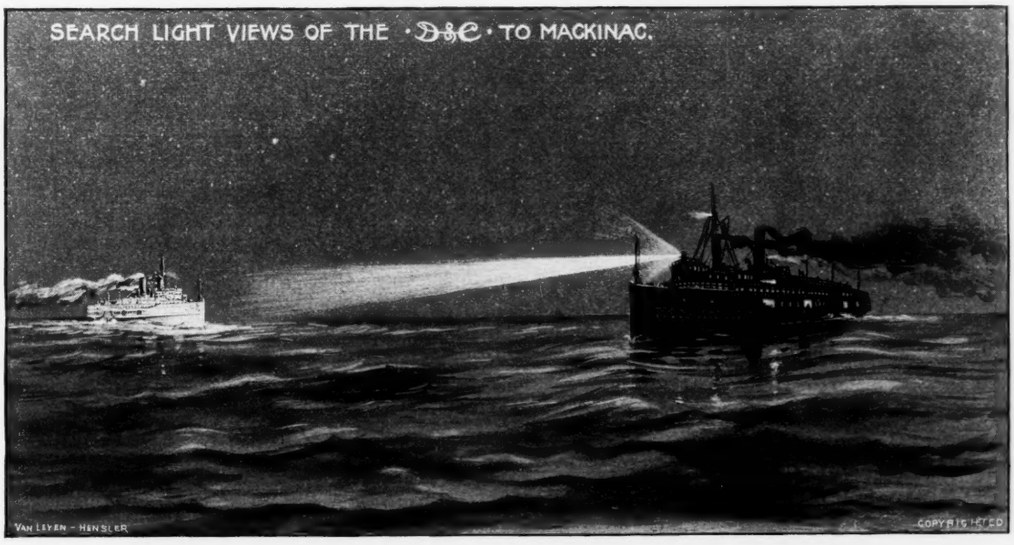
PLEASURE RIDING.

A feature of Detroit that has done more than its share to make the City of the Straits famous, and is particularly appreciated among landsmen, is the river pleasure riding. A dozen excursion steamers, being capable of accommodating several hundred passengers, are owned by the Detroit, Belle Isle and Windsor Ferry Company, and are used exclusively to reach the many places of interest in immediate touch of Detroit.

RUSSELL HOUSE, DETROIT.

HELPFUL TO PUBLIC PARKS.

About fifty delegates from all sections of the country attended the second annual convention of the Park and Outdoor Art Association at Minneapolis, June 22. In the absence of President John B. Castleman, of Louisville, Vice-President L. E. Holden, of Cleveland, presided. Mayor Pratt welcomed the delegates to Minneapolis. In speaking of the short time in which the western wilderness had been made to blossom like the rose in the onward march of civilization, the mayor dwelt upon the wonderful growth of Minneapolis. The first house had been built fifty years ago by a man who was still alive and now there was a progressive city of over 200,000 inhabitants. One of the great needs of the day was



PUBLIC SCHOOLS.

Incidentally, it might be mentioned for the information of visitors that Detroit has a wonderful public school system. Sixty-four large buildings, including a $1,000,000 high school, accommodate the 36,000 children.

to inspire among all classes of people a genuine love of nature. He hoped in conclusion that the visit of the association would be as enjoyable and profitable to its members as it would certainly prove inspiring and hopeful to the people of the city.

In replying, Mr. Holden said that the association would gladly unite with Minneapolis in studying outdoor art, and in teaching her people to preserve and adorn the parks. It was the mission of the association to have art go hand in hand with nature and to improve on the latter where opportunity offered. The growth of that idea would tend to promote the best ideas of civic life.

The first paper was delivered by Professor W. W. Folwell, president of the Minneapolis park commission, on "Playgrounds and Public Squares." The problem of the day, he thought, was how to regain the lake and river-shore drives for the public benefit. It should be made impossible for private parties to get control of great natural beauty spots. All of the waste land should be redeemed for the use of the public. There should be a perpetual wilderness in every state. There should be "wilderness parks" in the city where the city boys could roam and play at will.

DETROIT LIGHT INFANTRY ARMORY (THE CONVENTION HALL).

O. C. Simonds, landscape gardener of Chicago, read a paper on "Appreciation of Natural Beauty." He said that the appreciation of the beautiful in nature was due as much to education as heredity. Mrs. Robert Pratt read a letter from a Minneapolis school teacher, saying that the schools made good use of the parks. Mr. Balsley, of Detroit, said that the city had its flora and fauna labeled so that children could learn the names of plants and animals. Papers by Charles C. Lawrie, of New York, and Fanny Copley Leavey, of Cincinnati, were read. Detroit was selected for the next meeting place. The officers elected are: President, C. M. Loring, Minneapolis; secretary, Warren H. Manning, Boston; treasurer, E. B. Haskell, Boston; vice-presidents, P. H. A. Balsley, Detroit; W. H. Olmsted, Boston; G. H. Warder, Cincinnati; E. J. Parker, Quincy, Ill.; Lewis Johnson, New Orleans; M. L. Moore, Toledo.

MUNICIPAL REVIEW.

Under this heading municipal reports of all kinds will be reviewed each month. Every report sent to this office will be carefully read and any matter of general interest contained therein will be reviewed in these columns. This department is intended, especially, to give city officials the gist of the reports of their contemporaries throughout the country.

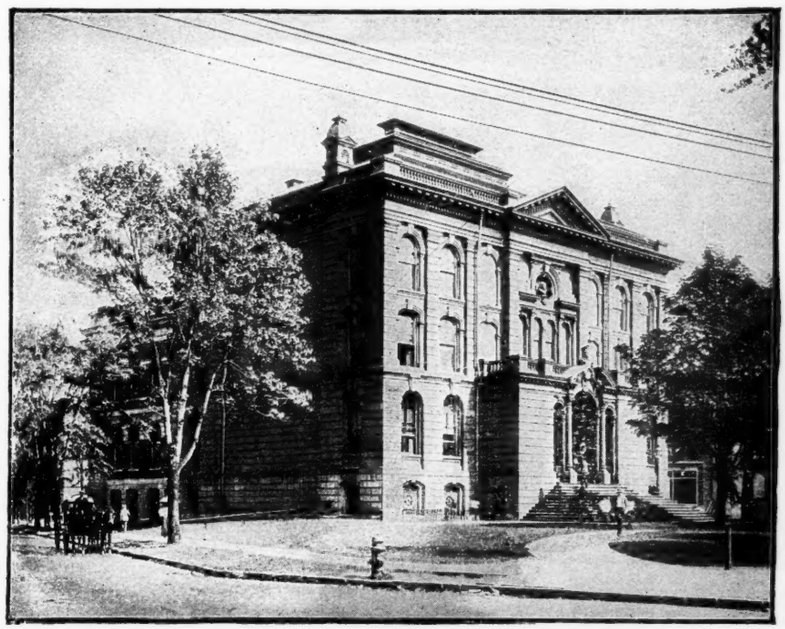
PITTSBURGH, PA.—TENTH ANNUAL REPORT OF THE DEPARTMENT OF PUBLIC SAFETY.

This is a book of nearly 600 pages, bound in cloth, and contains the reports for the year ending January 31, 1898, of the bureaus of fire, police, detectives, electricity, health, building inspection and gauging.

The fire department responded to 822 alarms during the year, but the total fire loss is not given. Chief Humphreys, in his report to Director Brown, says: "I desire to call your attention, and through you, to the law making power of our city, to the reported fact that oil, gunpowder, dynamite and other high explosives are stored in large quantities in various sections of the city and thus, in case of fire, are a continued menace to both life and property. There is an ordinance limiting the amount of stored gunpowder, but to the best of my knowledge there is none regulating oil and other high explosives. This should be remedied by the passage of a law and the appointment of proper officials, whose duty it shall be to see that the same is fully enforced." The fire fighting force, as shown by the roster, is composed of 26 engine companies, with 241 men; 8 hook and ladder companies, with 54 men, and 2 chemical companies, with 11 men. There are 5 first, 9 second, 10 third and 1 extra fourth size engines, 4 double-cylinder chemical engines, 5 aerial and 3 ordinary hook and ladder trucks. The salaries of the fire department for the year amounted to $305,611.57.

CHAMBER OF COMMERCE, DETROIT.

Morris W. Mead, superintendent of the bureau of electricity, reports the successful reconstruction of the fire alarm and police telegraph systems in the new building of the department of public safety and the connection for practical work of all circuits, with the storage battery instead of the old gravity batteries. His report says:



PUBLIC LIBRARY, DETROIT.

"The special switch-board for controlling the storage battery consists of three 10-circuit boards, or thirty circuits altogether, of which twenty-two are used on box circuits, and the balance for striking battery, office, local and police telegraph circuits. This is by far the largest storage battery outfit possessed by any city in the country for city work. The batteries are charged from dynamos in the cellar, at 110 volts pressure, and after nine months' service, we find they have operated perfectly and at far less expense than the gravity battery would have been. I believe it is destined to be introduced into all cities." The report says the telegraph poles have been largely removed from the business part of the city, and all companies have made strenuous and proper efforts to place their wires underground.

Superintendent of Police Leslie reports 16,470 arrests for the year, an increase of 1,018 over the preceding year. The fines amounted to $28,876.87. The city is divided into three police districts and the numerical strength of the force is about 370.

RICHMOND, VA.—ANNUAL REPORT OF THE AUDITOR OF THE CITY.

The book contains a complete statement of the financial accounts of the city, carefully prepared and conveniently arranged by Auditor Edward J. Warren. The total liabilities of the city at the end of the fiscal year, January 31, 1898, amounted to $7,396,041.91, of which $7,233,682.60 represents the bonded indebtedness. The estimated value of the city property is $7,140,273, including $2,100,000 for water works, $1,000,000 for gas works, $1,401,550 for city hall, and $468,250 for school property. The assessed value of property subject to taxation is $67,993,284, of which $45,194,062 is on real property. The receipts of the municipal gas works for the year were $180,034.98, while the expenses for operation, extensions and salaries amounted to about $120,000.

LOWELL, MASS.—TWENTY-FIFTH ANNUAL REPORT OF THE LOWELL WATER BOARD.

This report says the interest in the meter question has continued, and over 600 meters have been set, at the request of water takers, during the year. The daily consumption of water was almost the same as in 1894, and was nearly half a million gallons per day less than in 1896. The total water consumption for 1897 was 2,406,943,014 gals. Total charges for water $222,524.

The water furnished for the past year by the city of Lowell for all purposes has been driven well water, except a small amount supplied by the filter gallery. The full amount used by the city was 6,594,364 gallons per day, 450,000 gallons of which were supplied by the filter gallery. The available area of the filter gallery for filter purposes is 9,150 square feet, yielding at the rate of 2,164,000 gallons per acre per day. This water is not so good as well water, as it contains more iron, but it is softer and perfectly safe to use. The filter gallery has a storage capacity for 500,000 gallons which can be used so that either the Boulevard plant or the West Sixth street pumping station can be run for a short time independently of the other.

CITY HALL, DETROIT.

EXHIBITS OF THE BUFFALO CONVENTION.

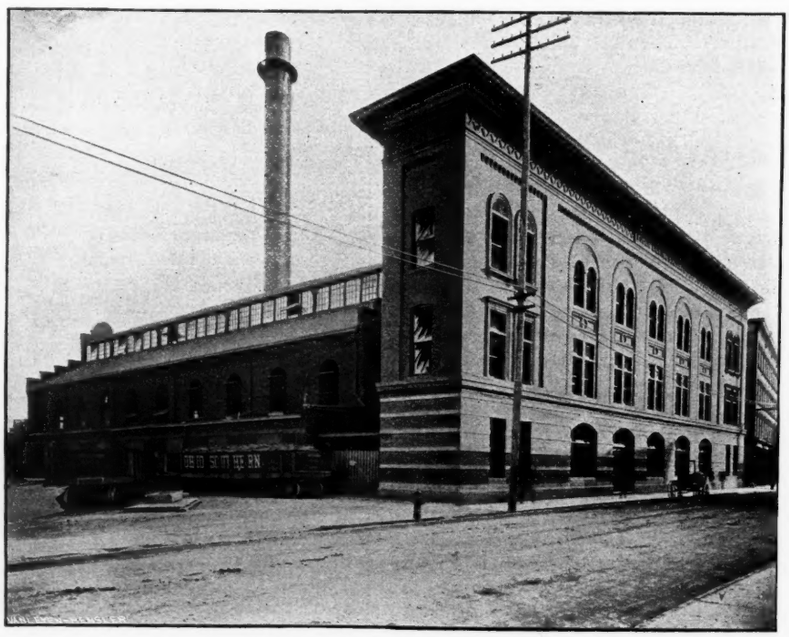
The exhibits at the recent Buffalo convention of the American Water Works Association, which occupied two large sample rooms in the Hotel Iroquois, were numerous and interesting. Everything in the line of water works supplies was shown and the exhibits were carefully examined by the delegates to the convention, who must necessarily feel indebted to the manufacturers for affording them the opportunity to see devices and apparatus so conveniently arranged. For the benefits of those water works officials throughout the country who were unable to attend the convention, the following description of the exhibit is given:

HARMONIE HALL, DETROIT.

The Pittsburg Meter Co had the well-known Westinghouse water meter on exhibition, showing all its parts, its simplicity of construction and its many excellent points. An examination of this meter shows that it is made for accuracy and durability, the two most important characteristics of a satisfactory water meter. The rapidity with which the Westinghouse has come to the front within the last few years is not surprising when one looks at the simple and truly scientific construction of it. It is impossible to imagine how such an apparatus could ever wear out, break or fail to measure accurately. The meter is positive in action, and the wear is taken up by the free acting rollers, which, with the perfectly balanced piston reduces the friction to a minimum. Only the best material and workmanship are used in its construction. The working parts are made of a special mixture of meter metal. The metal is noiseless, and being self-cleansing, is not affected by muddy water. Westinghouse meters are furnished with dials to register in either U. S. gallons or cubic feet.

A new and improved apparatus for testing water meters, exhibited by Fred W. Gow, of Medford, Mass., attracted a great deal of attention. The device is composed of a clamp which will take any of the different makes of meters now in use in the 1, $\frac{3}{4}$, $\frac{5}{8}$, or $\frac{1}{2}$ in. sizes. Back of the clamp is an attachment for $1\frac{1}{2}$ and 2 in. meters. In using the clamp no tools of any kind are required, the meter being pressed in the clamp by turning up on the hand wheel. The water passes through the clamp and meter and is delivered into the weighing or measuring tank through two multiple delivering cocks. By the use of these revolving cocks, twelve different size streams can be obtained without the changing of diaphragms or bushing the delivery pipe; no tools of any kind are required. The No. 1 cock will deliver a $\frac{5}{8}$, $\frac{1}{2}$, $\frac{3}{8}$, $\frac{1}{4}$, $\frac{1}{8}$, $\frac{1}{16}$, $\frac{1}{32}$, or a $\frac{1}{64}$ in. stream. The No. 2 cock will deliver a 2, $1\frac{1}{2}$, 1 or a $\frac{3}{4}$ in. stream. These cocks can be used together or separately and can be attached to any apparatus now in use and do away with twelve different cocks and fittings over the tank or with the changing of the diaphragm for each stream wanted. An indicator on the side of each cock shows the size of stream being delivered.

"The disappearing cannon" was a feature of the exhibition hall. It happened that B. H. Sanders, superintendent of the Pleuger & Henger Manufacturing Co., of St. Louis, had the kindness of heart to bring to the conven-



MUNICIPAL ELECTRIC LIGHT PLANT, DETROIT.

tion its very best souvenir—in the shape of a polished bronze miniature cannon. These cannons, which, by the way, were made in the Pleuger & Henger shops, were not only beautiful and useful for paper-weights, but very appropriate to the times. Mr. Sanders brought a trunk-load of them to the convention and passed them out generously. Then he secured some American and Cuban flags, built a miniature fort in the exhibition hall and armed it strongly with about two dozen of the souvenir cannons. After this interesting and appropriate exhibit was completed, Mr. Sanders went out to get a drink—of water. As soon as he left the room, an attack was made on the fort by an army of meter, valve and pipe men, who promptly confiscated every cannon. This military operation was repeated as many times as Mr. Sanders came back and placed more cannons in position. Thus it was that the souvenir became known as "the disappearing cannon."

The Thomson Meter Co., of Brooklyn, not only made a creditable display in the exhibition hall, but kept "open house" for their friends in one of the elegant private parlors of the Iroquois. In this parlor the delegates were cordially received by the genial secretary of the company, Henry C. Folger, assisted by E. J. Snow, E. N. Ivins and H. R. Putnam. At a water works convention Mr. Folger and his affable lieutenants are by no means strangers, and the splendid manner in which they entertained their multitude of friends at Buffalo was highly appreciated. In the exhibit hall the Thomson company showed the well-known Lambert meter, in which are embodied all the improvements which the tests of time and long service have proved to be requisite in a perfect meter. The internal gearing used has been radically remodeled and made entirely of new patterns. It is said to be the best wearing, most sensitive and strongest internal gear train ever put in a water meter. It consists of four gears and four pinions. The gears are made with very heavy teeth cut by special machinery, all wheels being 5-16 of an inch thick at the toothed portion of periphery, and are cast of semi-hard bronze composition (tin and copper). The four pinions, which are of large diameter, are made of the very hardest grade of phosphor-bronze. The central axes or pivots of the gears are made of very hard 18 per cent. German silver, journaled freely at both ends in hard bronze composition bearings 5-16 of an inch deep. The connection with the least speeded gear and the stuffing-box shaft is made by an intermediate strong, double-armed crank, rigidly fastened on the shaft and engaging loosely into the arms of the last gear, which is freely mounted on a large central bronze hub cast solid with the bride plate. The connection between these two parts, while positive, is not restrained in its alignment; hence, any variation due to the bolting of the upper casing or the register cup will have no effect whatever on the sensitiveness of the gearing. For all sizes of the Lambert meter, from ⅝ of an inch to 6 inches inclusive, the internal gears, pinions and bridges are the same and interchangeable.

The H. Mueller Manufacturing Co., of Decatur, Ill., enjoyed the distinction of having the largest and one of the most interesting exhibits of the convention. The variety of water works tools and supplies made and exhibited by this enterprising company was so large that a description of the display cannot be given in the limited space here allowed. The Mueller goods, however, are so well and favorably known throughout the country that a description of the same is unnecessary. Adolph and Fred Mueller attended the convention, and the cordial manner in which they met the delegates was a token of the popularity of the house of Mueller in the water works field.

The Lead Lined Iron Pipe Co., of Wakefield, Mass., interested all the delegates in the display of their unique product. Lead lined iron pipe is rapidly coming into universal use, and deservedly so, because it has points of superiority in both sanitary and economical considerations.

J. W. Strackbein, of Chicago, representing the Michigan Brass & Iron Works, of Detroit, was present with a number of photographs and drawings to illustrate the merits of the gate valves and fire hydrants made by his house. Among the pictures shown was a beautiful lithograph of the battleship "Iowa," which is entirely fitted with 2 to 17-inch all gun metal Michigan gate valves.

The Union Water Meter Co., of Worcester, Mass., exhibited the Union rotary piston, the Columbia and the Ball & Fitts reciprocating piston meters, all of which have their good points, which are recognized by water works men.

The Payne Tapping Machine Co., of Fostoria, Ohio, showed their tapping machines, which have been reduced to the acme of perfection and simplicity, having neither valve or pet cock to get out of order and no revolving head to get sprung or joint to leak.

The Goulds Manufacturing Co., of Seneca Falls, N. Y., exhibited a number of drawings and photographs illustrating the Goulds triplex power pumps operated by electric motors. As the Goulds people are known as pioneers in electrical water works pumping, their exhibit atttracted considerable attention.

Fred. A. Smith represented the Sherrard & French Co., of New York, and displayed the devices made by that concern for inserting valves and branches in water mains under pressure. These devices were invented by Morris R. Sherrerd, engineer and superintendent of the water department of Newark, and D. W. French, superintendent of the Hackensack Water Co., and they are made on scientific principles and do their work perfectly.

The Glauber Brass Manufacturing Company, of Cleveland, O., had on exhibition their curb cocks, which have been on the market for many years, and are known from ocean to ocean for their excellence of design and construction.

The Walworth Manufacturing Company, of Boston, made an interesting exhibition of the various water works tools and supplies manufactured by them, including the Walworth gate valve, Miller's reversible ratchet dieplates and Hall's tapping machine.

The Crosby Steam Gage & Valve Company, of New York, showed some very finely made apparatus useful for water works plants.

George R. Estabrook, general manager, represented the Fisher Governor Co., of Marshalltown, Ia. He displayed the Fisher steam pumping engine governor for controlling the pressure in water mains. This apparatus, which has a favorable reputation among the water works men, is simple in construction, works automatically, pre-

vents overpressure in the water mains, saves the engineer's time, as it is not necessary to watch the pressure, prevents mains and hose from bursting in case of fire, and saves fuel, as no more steam is used than is sufficient to keep the water pressure to the desired point. Brass pipe work is used on the governor, and the valve and seats are made of the best phosphor-bronze. Mr. Estabrook distributed a neat souvenir, in the shape of a leather covered memorandum book and stamp case, among the delegates.

The Hersey Manufacturing Co., of South Boston, Mass., had a novel exhibit, composed of a sort of a pyramid made of pipe and meters, connected, and finished in gold and silver. The several well-known meters manufactured by this company were also shown separately. Their Disc meter is one of the most successful types of rotary meters, the piston of which operates with a gyratory motion by the pressure of the water. A known amount of water is displaced for each gyration of the piston, in the same way that a certain amount of water is displaced in a piston meter by each reciprocation of the piston. It is extremely sensitive in its registration, is well and substantially made of the very best of materials and is interchangeable in all parts. The Hersey meter is a leading type of positive piston rotary meter, the piston of which operates in a circular path by the pressure of the water, displacing a known amount of water for each revolution of the piston, just the same as a certain amount of water is displaced in a piston meter by each reciprocation of the piston. This meter is remarkably durable, and is capable of an immense amount of hard, long time and accurate service.

The Lenox Machine Co., of Marshalltown, Ia., exhibited their improved tapping machine. It is a simple, complete and durable apparatus for tapping mains against pressure, and at the same operation, inserting cocks and plugs without shutting off or in any way interfering with the pressure in the pipes. With this machine you can take out a small cock, enlarge the hole and put in a larger cock by screwing in the plug while making the change. It is also provided with pinion and rack, and can be readily twined to place under the heaviest pressure. It will tap any size pipe up to thirty inches.

Thomas Watkins, of Johnstown, Pa., had on display his patent pipe jointer, a device designed to save much time, trouble and expense in joining pipe. Many of the water plants throughout the country are now using the Watkins pipe jointer, and its virtues are quite well known.

A. Heine, of Evansville, Ind., was present with the Heine-Woerner multiple valve, the merits of which he explained to the interested delegates.

The Eddy Valve Co., of Waterford, N. Y., exhibited the well-known Eddy rubber faced fire hydrant, and gave away glass paper-weights as souvenirs of the occasion. Hydrant exhibits were also made by the Ludlow Valve Manufacturing Company, of Troy, N. Y., and the Viney Independent Gate Valve Co., of Philadelphia. As all of these companies have been making hydrants for a good many years and have met with unvarying success, we are constrained to believe what each one of their representatives at Buffalo said—that his hydrant was superior to all others.

John Thomson, W. G. Zick, E. B. Holly and Col. A. P. Corse represented the Neptune Meter Co., of New York. They had a complete and attractive exhibit of Neptune meters, the good qualities of which are known all over the land.

The Ross Valve Company, of Troy, N. Y., exhibited their feed-water filter for boilers, which is said to meet the most exacting requirements.

Other exhibitors were the National Meter Co., of New York; Henry R. Worthington, of Brookyn; the W. J. Clark Company, of Salem, Ohio; the Rennsalaer Manufacturing Company, of Troy, N. Y., and Anthony P. Smith, of Newark, N. J.

The Snow Steam Pump Works, of Buffalo, and the Holly Manufacturing Company, of Lockport, did not make exhibits, but they were well represented, and each supported an appropriately equipped parlor at the Iroquois.

GARBAGE REDUCTION AND UTILIZATION.

The invention of an absolutely sanitary and economically operated system for the reduction and utilization of garbage ought to be a satisfactory solution of the garbage problem, which has given city officials so much trouble for years. Such a system—the Holthaus—has been invented. The efficacy of the Holthaus system has been thoroughly proved. Every competent health official, engineer or layman who has examined the Holthaus system has pronounced it absolutely sanitary in operation, and that it can be used to financial advantage has also been demonstrated. Several months ago this paper printed a complete description of this system, from which any person can readily see that it is all that is claimed for it. City officials who are now studying the garbage question, with a view to securing for their municipalities a reduction and utilization system without either financial or sanitary objections, will do well to give the Holthaus system careful attention. The patents on the system are the property of Mr. Cyrus C. Currier, one of the best known and most successful business men of Newark, N. J., who will be pleased at any time to give the fullest information possible concerning the matter.

LOOK OUT FOR THE TRUSTS.

The attempt to pack the Columbus convention in order to prevent any action favorable to the municipal ownership of lighting plants will be well remembered, and if a similar attempt is made to control the Detroit meeting the delegates will be on their guard. One of the principal objects of the league is to disseminate through its bureau of information, facts and figures concerning all municipal questions. The bureau of information has adhered strictly to the truth in sending out information, despite the fact that the publication of truthful statements has not been altogether pleasant to certain trust and corporation interests.

IMPORTANT TO DELEGATES.

Every delegate, exhibitor, press representative or visitor to the convention should register at the secretary's headquarters in the Hotel Cadillac as soon as possible after his arrival. The official badges of the convention will be given out at the secretary's headquarters as the registration proceeds.

RELATION OF STREET RAILWAYS TO MUNICIPALITIES.

The following information has been collected by the League of American Municipalities:

Atlanta, Ga.—There are three street railway companies: The Consolidated Street Railway Co., with 66 miles of track; the Atlanta Railway Co., with 20 miles, and the Collins Park and Belt Street Railway, with 8 miles. Total mileage, 94. Electric motive power only. All companies required to pave between tracks. The real property of the companies is assessed at $10,900 and the personal property at $389,100 for taxation. Franchise not taxed, and companies not required to pay license on cars or mileage, nor a percentage on earnings. The rate of fare is five cents, and transfers are issued only by the Atlanta Railway Co. The matter of forcing the Consolidated Co. to issue transfers is now in the courts.

Augusta, Ga.—The Augusta Railway and Electric Co., with a franchise expiring in 1939, monopolizes the business. It has 24 miles of track operated entirely by electricity. Pays taxes on real property assessed at $22,000 and personal property assessed at $178,000. Franchise not taxed. Company not required to pave between tracks, pays no license on cars or mileage and no percentage of earnings. Fare, five cents; transfers at all intersections.

Columbus, Ohio.—The Columbus Street R. R. Co., with 61 miles of double track, and the Columbus Central Street R. R. Co., with 15 miles of double and 15 miles of single track, operate here, using electric power exclusively. Both companies have many franchises and they expire at various times. Companies required to pave between tracks and one foot on each side. Companies taxed on real and personal property, but not on franchises. The Columbus Street R. R. Co. property is assessed at $500,000, and the Columbus Central Street R. R. Co. property at $125,000. No license on cars or mileage. Fare 5 cents or six tickets for 25 cents, and each company transfers to its own intersecting lines.

Cheboygan, Mich.—D. J. Kennedy, of Bay City, operates two and one-half miles of horse-car line here, upon which no taxes of any kind are paid. Fare 5 cents, no transfers.

Dayton, Ohio.—Four companies, with a total mileage of 17½, operate here. All franchises granted in 1894 to run fifty years. Electricity is the only motive power used. Companies required to pave between tracks and 18 inches outside rails. Street railway property assessed at $300,000 is taxed. No tax on franchise. No car or mileage license and no percentage of earnings paid to city. Fare five cents or six tickets for 25 cents, with transfers at all intersections.

Des Moines, Ia.—One company, with 30.78 miles of track, operates here. Electric power only. Company required to pave between tracks. Property of company assessed at $148,000 for taxation. Franchise not taxed. No license on cars or mileage. Company required to pay city 5 per cent. of net earnings, but on account of excessive capitalization and high rate of interest no net earnings have been shown. Fare 5 cents, with transfers only at central station.

Danville, Va.—There is one company here which operates three miles of electric road under a franchise granted in 1886 and expiring in 1916. Company is required to pave between the tracks. The property of the company, assessed at $38,000, is taxed by the state, but not by the town. Franchise not taxed; no license on cars or mileage, and city receives no percentage of earnings. Fare 5 cents, with transfers at all intersections.

Evansville, Ind.—The Evansville Street Railway Co., operating 28½ miles of electric road, has a franchise granted in 1891 and running for twenty-five years. Company required to pave between tracks. Pays taxes on real property assessed at $26,130, and on personal property assessed at $184,170. Franchise not taxed; no license on cars or mileage. Company pays to city 2 per cent. of gross earnings, which amounted to $2,734.26 for the last fiscal year. Fare 5 cents, or six tickets for 25 cents, with transfers at all intersections.

Elizabeth, N. J.—There are two companies here, operating under franchises which are perpetual. One company operates 18 miles of electric road and the other three miles of horse railway. Companies pave between tracks. They pay taxes on real property assessed at $16,300, and on personal property assessed at $230,000. Franchise not taxed; no license on cars or mileage and no percentage of earnings paid to city. Fare 5 cents, with transfers at all intersections.

Grand Rapids, Mich.—The Consolidated Street Railway Co., operating 50 miles of electric road, has a franchise expiring in 1921. Company required to pave between tracks and 8 inches on the outside. Pays taxes on real property assessed at $70,000 and on personal property assessed at $96,000. Franchise not taxed. Company pays a license of $5 per car per year and this amounted to $270 for the last fiscal year. No percentage on earnings paid the city. Fare 5 cents, with transfers at all intersections.

Hartford, Conn.—The Hartford Street Railway Co. engages the field here, with 6 miles of double and 10 miles of single track. Electric power only. Franchise granted in 1859 and perpetual. Company required to pave between tracks and two feet on each side. Real estate owned by company and not used for railway purposes is taxed. Company pays 2 per cent. of gross receipts to city, which amounted to about $8,000 last year. Company pays 1 per cent. of market value of stock and 1 per cent. of amount of debt to state annually. No license on cars or mileage. Franchise not taxed. Fare 5 cents; transfers at all intersections.

Hudson, N. Y.—There is one company here, operating two miles of electric road, under a fifty-year franchise expiring in 1938. Company required to pave between tracks. Pays taxes on real property assessed at $21,000. Franchise not taxed; no license on cars or mileage and no percentage of earnings paid the city. Fare 5 cents, no transfers.

Ironton, Ohio.—The Ironton Electric Light and Railway Co., with a 15-year franchise expiring in 1921, operates eight miles of electric road. Company paves between tracks. Pays taxes on real and personal property assessed at $15,000. Franchise not taxed. No license on cars or mileage and no percentage of earnings paid the city. Fare 5 cents; no transfers.

Kansas City, Mo.—Three companies operate here, under franchises which expire twenty-four years hence. There are ten miles of electric road and 73 miles of cable road. Companies are required to pave between tracks. They pay taxes on real property assessed at $500,000 and on personal property assessed at $900,000. Franchises not taxed. Companies pay city $30 per year per car on the average daily number of cars operated, and the income from this source for the last fiscal year amounted to about $9,000. No percentage of earnings paid city. Fare 5 cents, with transfers at all intersections.

Louisville, Ky.—Only one company here, with franchises granted at various times. There are 60 miles of double and 20 miles of single track; 70 miles operated by electricity and 10 miles by horses. When street pavement is disturbed by company it must repave same. Company pays taxes on real property assessed at $300,000 and personal property assessed at $1,500,000. Franchise has

been assessed at $3,057,362, but the question of taxing it is now in litigation. No license on cars or mileage. Fare 5 cents; school children 2½ cents; extensive system of transfers.

Logansport, Ind.—One company with a perpetual franchise operates five miles of electric road. Company required to improve and keep in repair all streets used by it. Pays taxes on real property assessed at $26,040 and on personal property assessed at $26,040. Franchise included in the assessment of personal property. No license on cars or mileage and no percentage of earnings paid to city. Fare 5 cents; no transfers.

Minneapolis, Minn.—The Twin City Rapid Transit Co., with a fifty-year franchise, expiring in 1925, operates about 176 miles of electric road. Company required to pave between tracks. The personal property of the company is assessed at $684,458 for taxation; taxes are also paid on real property, but the amount cannot be ascertained because the property is held in several different names. The franchise is included in the assessment of personal property, its value being placed at $121,000. Company pays a license of $25 per car per year on the average number operated daily and the income from this source for the last fiscal year amounted to $3,775. No percentage of earnings paid city. Fare 5 cents, with transfers at all intersections.

Marshalltown, Ia.—One company here, with a franchise granted in 1878 for twenty years. There are 6 miles of track, of which one-fourth mile is double. Electric power only. Company not required to pave between tracks. Company pays taxes of $11,300 of real property and $500 of personal property. Franchise included in personal property assessment. No license on cars or mileage and no percentage of earnings paid city. Fare 5 cents, with transfers.

Manchester, N. H.—One company operates twenty miles of electric road here. Company required to pave between tracks. Road is taxed by the state, but not by the city. Fare 5 cents, with transfers at all intersections.

Newark, N. J.—There were two street railway companies operating here during 1897, the Consolidated Traction Co. and the Newark and South Orange Railway Co. It is understood that these companies have recently been merged into one corporation, to be known as the North Jersey Traction Co. It is impossible to say when the franchises of these companies were granted, as they operate under an accumulation of franchises granted to horse railway companies during the last forty years, and these franchises are supposed to be perpetual. Nothing but electric power is now used. Company required to pave between tracks and one foot outside of outer rail. Last year the two companies paid taxes on real property assessed at $2,300,000 and on personal property assessed at $650,000. Franchise not taxed, as it has been decided by the Supreme Court of the state that franchises are not taxable. City collects a license of $10 per year per car on the average number of cars operated, and for the last fiscal year the income from this source amounted to $3,950. Company is also required to pay city 5 per cent. of its gross earnings, and the income from this source the last fiscal year amounted to $67,959.38. Fare 5 cents, with transfers at all intersections.

Nashville, Tenn.—There are three companies here, the Nashville Street Railway Co., which is a consolidation of the many roads built from 1866 to 1890; the Nashville and Suburban Railway, started in 1887, and the Citizens' Rapid Transit Co., started in 1889. All franchises are perpetual. Companies required to pave between tracks. They pay taxes on real property assessed at $36,150 and on personal property assessed at $1,058,550. Franchise is assessed with the personal property. City collects a license of $35 per car per year. No percentage of earnings paid city. Fare 5 cents; transfers made only at central station.

Niagara Falls, N. Y.—There are three companies here. The Niagara Falls and Suspension Bridge Street Railway Co. has a fifty-year franchise, expiring in 1942, and operates about 15 miles of electric road. Company required to pave between tracks. Pays taxes on real property assessed at $148,580 and on personal property assessed at 55,000. Franchise not taxed. City collects a mileage tax, which amounted to $3,591.96 last year. City also collects 3 per cent. on 23 5-10 per cent. of the gross earnings, which amounted to $708.23 last year. Fare 5 cents; labor tickets, between six and seven o'clock, 2½ cents; transfers at all intersections. The Niagara Falls and Lewiston Street Railway Co. has a fifty-year franchise, expiring in 1946, and operates about 3½ miles of electric road. Company required to pave from curb to curb on streets occupied by it. Company pays taxes on real property assessed at $201,700. Franchise not taxed. City collects a mileage tax, which amounted to $3,499 last year. No percentage of earnings paid to city. Fare, 60 cents round trip. The Niagara Falls, Whirlpool and Northern Street Railway Co. has a fifty-year franchise, expiring in 1944, and operates a mile and a half of electric road. Company required to pave between tracks; pays taxes on real property assessed at $9,000; franchise not taxed. City collects a mileage tax, which amounted to $149.96 last year. No percentage of earnings paid to city. Fare 5 cents.

Omaha, Neb.—The Omaha Street Railway Co. has a forty-year franchise, expiring in 1928, and operates 64 miles of electric road. Company required to pave between tracks. Pays taxes on real property assessed at $70,900, on personal property assessed at $425,000 and on franchise assessed at $150,000. No license on cars or mileage and no percentage of earnings paid to city. Fare 5 cents; transfers are issued at all intersections, but do not transfer passengers in all directions.

Providence, R. I.—The Union Railroad Co. has a twenty-year franchise, expiring in 1912, and operates 63½ miles of electric road. Company required to pave between tracks and eighteen inches outside of outer rails. Pays taxes on real property only, which is assessed at $953,900. Franchise not taxed. No license on cars or mileage. Company pays city 3 per cent. on gross earnings to July 1, 1898, and 5 per cent. for the next five years. The income from this source last year amounted to $26,746.30. Fare 5 cents; no transfers.

Savannah, Ga.—One company operates here. It has a franchise granted in 1897 and expiring in 1998, and operates about 9 miles of electric road. Company required to pave between tracks and two feet outside of outer rails. Pays taxes on real and personal property assessed at $163,000. Franchise not taxed. License $25 per car per year. No percentage of earnings paid to city. Fare 5 cents, with transfers to any part of city.

Salem, Mass.—The Lynn and Boston Railroad Co. operates here. Electric motive power only. Company required to pave between tracks. Pays taxes on real property assessed at $108,000 and on personal property assessed at $50,000. Franchise not taxed. No license on cars or mileage and no percentage of earnings paid to city. Fare 5 cents, with transfers at all intersections.

Toledo, O.—The Toledo Traction Co. operates 50 miles of double and 60 miles of single track, under several franchises of various dates. Company required to pave between tracks and one foot outside. Pays taxes on real property assessed at $150,000 and on personal property assessed at $200,000. Franchise not taxed. No license on cars or mileage. Fare 5 cents, with transfers.

MUNICIPAL FRANCHISE CONTRACTS.*

By H. H. Keeler,
President Rogers Park Water Co., Chicago.

Private enterprise and capital when guided by a thorough knowledge of the situation and requirements and the results desired, have enabled many cities and villages of our country to secure a satisfactory water supply which was an absolute necessity to public comfort, health and safety, and which otherwise they would have been utterly unable to obtain.

Prominent among the obstructions in the way stand constitutional limitations upon borrowing money or incurring indebtedness by municipalities. Many communities are unwilling to go in debt to the extent necessary to construct a proper system of water works and keep the mains extended to meet the demands of rapid growth.

Sometimes the necessity for sewers, public buildings, schools, improved streets, fire departments or other public requirements, is so pressing that the amount of money which can be raised by taxation or borrowing, is devoted to some of these purposes, while private capital is available to procure a water supply.

Besides this the success of many of our American cities in dealing with those affairs which must be left to municipal control, has not been so conspicuous as to encourage thoughful and conservative men to extend their functions. It may well be doubted whether the true plan should not be to carry on by private enterprise, under proper control, everything not governmental in its nature and which is capable of being so conducted. The well-known higher cost of all work done under municipal management, and the corruption too often connected with municipal affairs, afford powerful arguments in favor of private water works.

Whenever it is found desirable to construct a water system by private capital it becomes a problem how best to safeguard the interests of all parties concerned. The interests to be protected are those of the municipality itself and of its inhabitants who are or may become consumers of water, and those of the bondholders and stockholders of the company.

These interests, however, resolve themselves into two only. The public interests are all in the hands of the representatives of the people who have been elected to protect them, and whose action is binding upon all the individuals composing the public. The officers of the company, while acting within the scope of their authority, represent all the interests of the company, and their actions bind the bondholders as well as the stockholders. Unless both parties desire to deal honestly and fairly with each other it is better to abandon the enterprise at the start.

A contract of this character must of necessity be for a long period of years, and through this entire period the conduct of both parties should be guided and controlled by the desire to carry out the contract and agreement as made in letter and in spirit. All the terms and conditions of the contract should be carefully thought out in the light of experience and the local conditions. There should be a strong determination on both sides to have everything thoroughly understood and clearly expressed. Then the conditions of the contract should be faithfully observed by both parties as expressed.

Many cities are now endeavoring to annoy and harrass the water companies and to depress and destroy the value of their plants for the sole purpose of securing them at a valuation less than their real worth, entirely forgetting the great service rendered by the company in the early days of its existence when it came to the aid of the community and helped to develop and build it up.

In nearly all cases the earnings at the beginning do not more than pay operating and fixed charges, and frequently they are not sufficient to even do that. The company bases its expectation of profits on the future growth of its business, and this is the work of years. Often the struggle for a bare existence ends in the appointment of a receiver. Of course those who put their money into water plants do it for profit and they expect an average profit which will fairly compensate them in view of the delay in returns and the risk they run. Moreover, the ability and skill required to make the enterprise a success are entitled to fair compensation. Thus on all accounts they are fairly entitled to considerably more than bare interest on the money invested.

The highly profitable private water plants are exceedingly few when compared with the large number in existence. I repeat, the percentage of those is small which are successful right through from the time they went into operation to date. A large number run for years without profit, and some until their final collapse. Indeed, this is so evident that we may reasonably assume the municipalities also expect that the water companies will realize fair profits on the construction and operation of their plants.

Nearly all franchises granted within the last twenty years provide for an option by the city to purchase the plant at some fixed period, at a valuation to be determined in the manner provided for in the contract. Within the last few years, where these options are about to mature, in quite a number of cases there seems to have developed a strong desire on the part of the public authorities or of individuals, to take every advantage and to overreach the water companies in every possible way to diminish the value of their property and practically confiscate them outright. This is done by all sorts of attacks, such as excessive taxation, interference in the operation of the works, or other adverse legislation in some of the numerous ways devised to accomplish the desired end, and these methods are no doubt well known to most of you. It seems strange that any one who pretends to possess a sense of justice should stoop to such conduct, but the sad fact remains.

In formulating a water works franchise or contract it should be considered that the municipality furnishes the use of the streets and other public rights of way for the distributing mains and lines, and it also contracts for a supply of water for its use as a corporation, and for its inhabitants for their private use.

The agreed compensation for such use constitutes the entire income of the company. The city agrees to pay for services for fire protection, sewers, parks and public buildings. The contract also fixes the rates to be paid by the inhabitants for domestic, sanitary or manufacturing uses.

The municipal authorities through the power delegated to them by the legislature, and as the elected representatives of the people at the time of making the contract, determine and name the rates that shall be paid and received for the various kinds of service. This course has been followed for years as right and just to all parties, and has been constantly sustained by the courts. Latterly several attempts have been made to arbitrarily change the rates expressed in the written franchise or contract, but so far without material success.

A private water company was operating in a suburb of Chicago, which was annexed to that city in 1893. This company had a legally granted franchise and contract which specifically fixed the rates for water for municipal and private use. In October, 1897, the city

*Paper read at American Water Works Convention.

council passed a brief ordinance which provided that this water company should charge the same rates for water supplied by it to private consumers which were charged by the city of Chicago for water supplied by its works. This ordinance pretended to impair the contract made by the original ordinance, which prescribed the rates authorized to be charged for water supplied by the company.

It was obviously unfair and unjust, because it attempted a change in the terms of the contract by one of the parties thereto without the consent of the other. Furthermore, the cost of the service to the company was very much higher than to the city, because the city pumps about twice as much water in a day as the company does in a year, and the quality of the city service and water is notoriously bad, and that of the company admittedly good. Argument is not necessary to show that it is not reasonable to ask the company to furnish perfectly clear filtered water at a high pressure at the same rates as the city charges for unfiltered water at a low pressure.

The company was not consulted and no effort was made by the city council to ascertain the merits of the case. A suit was brought to test the validity of this ordinance, which is now pending in the Supreme Court of Illinois. Meantime, the ordinance has been disregarded by the company and it continues to charge at its former rates. Somewhat similar attacks have been made in Carlisle, Freeport and Danville in Illinois, and in Denver, Col., as well as in other cities, which have resulted in litigation, but in no instance has any municipality finally succeeded in its attempt. As the result of numerous instances of municipal bad faith in such matters, a general distrust prevails in financial circles, and these franchises now go begging to the serious detriment of many communities which are thus deprived of water works.

The proper way to draw a franchise contract would be to grant to the company the right to erect, operate and maintain the water system free from municipal competition, which should at all times furnish a clear, wholesome, potable supply of water, ample in quantity and under a minimum and maximum pressure, and so constructed as to make ample allowance for future growth. Provision ought to be made so that future extensions can be demanded and compelled, to supply actual future needs and growth, but not speculative real estate deals.

The capacity of the plant should be clearly and definitely expressed, with provision for maintenance of capacity intact during the entire life of the contract.

The rates for all services, either public or private, should be such as will insure a fair return on the capital actually invested, but not on fictitious bonds or stock. The water rates should be on a sliding scale; higher for the first few years and descending as business increases. In fixing the rates local conditions are of supreme importance, for no two plants are operated under the same conditions. The city should reserve to itself the right to purchase the system and to become its sole owner.

To arrive at a fair basis for such purchase requires the consideration of all the circumstances and conditions which go to make up the situation as it actually exists, and not all of these can be predicted with accuracy at the time the contract is made. The object for which water works are constructed is to obtain the best possible water supply at the lowest rates for the service consistent with good business management, which must always contemplate depreciation and enlargement, and reasonable return on capital invested.

To attain this object municipal water systems are perpetual in duration; are monopolies; pay no taxes and have the free use of streets and public grounds. In order to obtain the same object the same rights ought to be granted to private systems. These systems, though built by private capital, are quasi public in their functions. Water works are a natural monopoly and ought to be recognized and protected as such.

This proposition secures ready assent when applied to municipal works, and the logic is unanswerable in all cases where operation depends on special privileges or franchises. One company is better than ten for the public convenience, whether the object is to operate a gas, telephone, street railway, or water company. Competition never permanently reduced the rates in any of these cases, but the duplication of systems surely increases the cost of construction and operation and gives no better service. In most cases the public has to pay this increased cost sooner or later. If not, it becomes a causeless waste and ought to be avoided. Every imaginable benefit to the public can be better secured by one system which is properly protected, limited and controlled. The failure to observe this principle has resulted in great loss to all concerned, while its recognition would result in decreased interest charges on capital and consequent reduced rates for service, and would again enable communities unable to build water works for themselves to secure the assistance of private enterprise, which at the present time is next to impossible to do. Capital does not require high rates of interest, but it does demand honest treatment and certainty in its returns.

The rights and interests of the public and the municipality are protected by the control which they reserve and their right of purchase. The municipality may properly be given the right to purchase the plant at any time on, say, six months' notice, provided the proper elements are considered and a proper method is fixed by which to ascertain the purchase price and mode of payment. The elements which must be considered certainly include the following:

1. The cost of the plant, including a fair construction profit. This should cover adequate compensation for skill and time thus employed.

2. Interest on the cost.

3. Compensation for risk, and development of the business.

Once more, local conditions are of controlling importance and no two systems will stand on the same basis. The cost of construction of the plant and all betterments should be ascertained at the time of construction; facilities for complete investigation should be extended; all books and vouchers be open to the municipality, and all accounts verified. To this should be added say 20 per cent. for a construction profit, and this fixes the price at which the municipality is then entitled to purchase.

The outstanding bonds, if any, must be assumed by the city and the balance paid in cash, unless otherwise agreed.

If the purchase is delayed, then interest on the price thus fixed is to be computed and also the agreed rate to cover the risk, and a fair valuation for the developed business, which is the result of years of skilful and experienced operation. It will be readily conceded that if the plant is in successful profitable operation so that the possession of it is desirable to the city, the company who made it so should be entitled to just compensation for having attained such a result. The amount of such remuneration is easily arrived at and ought to be readily conceded, and added.

From this amount should be deducted the net earnings of the company for the period, including whatever amounts may have been carried to depreciation or sinking fund account. The result thus ascertained would be the purchase price.

All waters should be supplied through meters only, except for use of fire department for extinguishing fires, and sewer department for flushing purposes. Then low rates per thousand gallons could be fairly and safely made so that free, liberal, legitimate use may be had of the necessary service at a minimum cost. It is a well known fact that more water is wasted than is legitimately used, and in all schedules of assessed or frontage rates this item of waste has to be considered and thus the careful, proper user of water is compelled to pay for a waste he does not cause, and for which he should not be obliged to suffer. Experience and records show that selling water by measurement is as proper and equitable to all concerned as for any other commodity, and the great increase in the use of meters shows that this fact is being rapidly recognized.

The local conditions which vary so radically in different communities makes it impossible to submit what might be considered a model form of contract, but the principles endeavored to be laid down in this article may safely be used to produce a contract just to both parties, which ought not to lead to friction in the future.

In conclusion, it seems to the writer that there is not only a necessity for the existence of private water supply, but that a fair, safe and just contract can be made by which both the municipality (unable to build for itself for various reasons) and private capital engaged in that capacity, can mutually undertake the enterprise with satisfactory results to both.

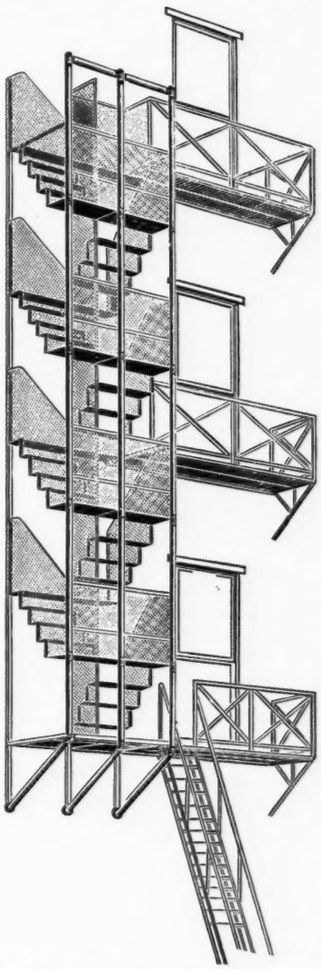
Municipal franchise contracts granted and made for water supply should obtain for the water company the same security and protection in their rights and property as is enjoyed by other investments.

Public control of rates charged for water service based on cost plus a reasonable profit eliminating municipal competition is a proper safeguard for the interests of consumers, investors and taxpayers.

A BURNING QUESTION.

Adequate and effective legislation for the protection of the lives of the occupants of all buildings in our cities is one of the great questions of the hour. The means and devices heretofore adopted for the saving of human lives, designated as fire escapes, have been proved to be utterly useless and inadequate for the purpose designed. Some of the states have passed effective fire escape laws, providing for the construction of stairs and doing away with the hideous man trap and excuse for a fire escape, the antediluvian stand pipe and ladder. School boards throughout the country are promptly taking steps to provide the necessary protection for the lives of the teachers and children under their charge and control, and for whose lives they are responsible.

The attention of our readers is called to an invention which is being adopted throughout the United States and Canada for public buildings, more especially school houses. The National Iron Manufacturing Company, of 39 Erie street, Buffalo, N. Y., and 88 East Washington street, Chicago, Ill., manufacture a fire escape under the Fairchild patent. This escape has been on the market for the past five years. It is so arranged that it is accessible at all times, no matter how hot or terrific a fire you may have. The escape is placed between the windows and not in front of them, thereby not cutting off the much needed light from the building, and in case of danger, the escape can be descended at all times, as it does not pass in front of windows, and those descending cannot be cut off by fire. The escape is a continuous stairway, protected on both sides by hand rails and guards, and consists of short, easy flights of stairs, and is easily descended by young or old, and even invalids and cripples. It is impossible for a person to fall and blockade the escape, or even be pushed off or injured, even though a panic may exist. The escape has standpipe connections which are highly recommended by the fire department, and tends to decrease the insurance rates. It has great strength, and is practically indestructible, besides being light in construction. It adds to, rather than detracts from the architectural symmetry of the building.



The school boards at Detroit, Wyandotte, Reading, Saginaw, Buffalo, Glens Falls, Oak Park, Ill., and many other places use and recommend this escape. Secretary Little of Glens Falls, recommends the escape to all school boards wishing good, safe fire escapes. President Seely, of Detroit, says: "We think the escape is the best in the market, especially for school buildings." There are many other testimonials from places throughout the country which are too numerous to mention.

The company manufacturing these escapes had a phenomenal growth, starting in a small way in Michigan in 1892. School boards and owners of public and private buildings saw the advantages of this escape over all others. The growth of the company continued from then on, starting by equipping buildings in Michigan, and gradually extending through the country. In the early part of '97, the business had grown to such proportions that it required the moving of the company's offices to 39 Erie street, Buffalo, N. Y., and opening branch offices in Chicago, St. Louis, Pontiac, Mich., New York city, Detroit, Toledo, Minneapolis, Denver, Omaha, and other cities. The capital stock of the company is a quarter of a million of dollars, and it is the largest concern of its kind in the world. Mr. W. G. Hay is president and Mr. A. O. Dunk secretary and treasurer. Colonel E. A. Filkins, the western agent, is in charge of the Chicago office, and the St. Louis office is presided over by Mr. John Lindsay, ex-chief fire marshal of that city.

Mr. Henry W. Atwater, of Montreal, will have the Decarie garbage incinerator on exhibition in Detroit during the convention of the League of American Municipalities. A small furnace of the Decarie pattern has been built, and Mr. Atwater will put it in actual operation at Detroit, showing his ability to burn garbage in a sanitary manner and at the same time generate steam for power purposes. No fuel of any kind is used in the Decarie incinerator.

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SPECIAL NOTICE.

City officials and friends of City Government visiting New York are cordially invited to make the office of City Government their headquarters during their stay in the city. Desks, stenographers and stationery are placed at their disposal, and their mail may be addressed in our care.

NOTE AND COMMENT.

With this issue CITY GOVERNMENT begins the third year of its existence. During the two years of life that it has seen this paper has achieved great things, among which we may be pardoned for mentioning a few of the most important. It was CITY GOVERNMENT that suggested and carried to a successful issue the first great national convention of mayors and councilmen at which the League of American Municipalities was organized. That this league is to be the most powerful force in the world for good municipal government will be quite well demonstrated at the convention to be held in Detroit next month. If CITY GOVERNMENT had not a single other achievement to its credit, this one of bringing about the organization of the municipalities of a great and glorious country would be sufficient to give it a prestige and standing higher than is enjoyed by any other publication of its age.

But we have done something else. We have enabled the mayors, public works commissioners and council members of our cities to save millions of dollars for their constituents by breaking away from the grasp of the asphalt combine. Always fearless and independent, CITY GOVERNMENT has fought this well entrenched and immensely wealthy trust tooth and nail, and the result is that more than a score of the greatest cities in the United States are now paying just about one-half the price for asphalt pavements that they were required to pay while the monopoly held its power. CITY GOVERNMENT has broken the power of one of the richest and most evil monopolies that ever existed. We did this by simply telling the truth—and you all know what a power truth is. It sometimes costs money to tell the truth, but whenever CITY GOVERNMENT finds that it cannot live without lying or even trying to fool its readers it wants to be put in a pine box and buried in a pauper's grave with only a shingle bearing the one word—Truth—to mark its last resting place.

An achievement of which we are particularly proud is that of building up a larger paid circulation than that of any other paper in the municipal field. CITY GOVERNMENT is not given away—"if it's good enough to be read it's good enough to be paid for and if it's good enough to be paid for it's good enough to be read" is the principle upon which we build circulation. Some papers in the municipal field have been there for ten and twenty years, but to-day they must fall in behind the two-year-old CITY GOVERNMENT on the score of circulation.

We might continue commenting on the many achievements of CITY GOVERNMENT, but it is just as well to sum up with this brief sentence: CITY GOVERNMENT is a success.

For nearly two years this paper has carried on a consistent and unrelenting warfare against the Trinidad asphalt monopoly, and the fight has brought great results. In these columns last month, after naming a number of cities which had discarded the use of monopolistic asphalt specifications during the last two years, we said: "About the only city of any note that still clings to the Trinidad monopolistic specifications is Milwaukee." We are pleased to announce that since the publication of our last issue, Milwaukee has decided to cut away from the monopoly. Hereafter the Cream City will admit asphalts other than Trinidad Lake and she will get just as good pavements for less money as the result of the reform.

Alderman Meyer, of St. Joseph, Mo., has set an example that should be followed by councils in many American cities, by introducing an ordinance providing for a prohibitive license on the trading stamp business. In operation the trading stamp scheme becomes a form of blackmail that should be vigorously discouraged. Retail merchants who prefer to do a legitimate business are forced into the trading stamp scheme in order to hold a considerable portion of their trade from going to the less principled retailers who introduce and encourage such cheap and unbusinesslike methods. The St. Joseph ordinance proposes to tax every merchant who handles trading stamps and every trading bank concern $500 per year. It ought to pass.

Our ever amusing and very esteemed contemporaries, "The Fireman's Herald," "The Western Fireman" and "Fire Water," are engaged in the pleasant pastime of riding rough-shod over each other. Brother Smith's essay at journalism has been derisively called a "pink pamphlet," Brother Shepard's production has been contemptuously alluded to as a "yellow sheet," while Brother Clark, with characteristic slyness, has evaded such scathing abuse by printing his periodical on pure white paper. The foresight of our friend Clark, in eschewing fancy colored covers, seems to have given him a tremendous advantage in the present fight.

WATER FILTRATION AND AERATION.*

BY S. A. CHARLES, SUP'T WATER WORKS, LEXINGTON, KY.

At a meeting of the association at Indianapolis in May, 1896, I read an article on "Filtration" in which I made the following statement: "I know of no reason for the use of a filter bed, whether original cost, expense of maintenance, available space, efficiency of filtration, removal of bacteria, facilities for cleaning, etc., are considered, which reasons will not apply with much greater force in favor of mechanical filters, provided only that the proper form of mechanical filter is used." My experience of two years since that time has confirmed those views, and I am pleased to note that others, among them Edmund B. Weston, of Providence, R. I., and Nicholas Simin, of Moscow, Russia, seem to have arrived at similar conclusions.

As probably most of my hearers have never seen my original article, I trust I will be pardoned if I repeat some of the statements then made.

The city of Lexington, Ky., is supplied with water by an impounding reservoir of about 120 acres in area, dependent upon the rainfall and the drainage area of about 3,000 acres for its supply. During the hot months, from June to October inclusive, our reservoir gradually becomes filled with algae and vegetable matter, at times in hot weather emitting an unpleasant odor. We also occasionally have an influx of mud after a heavy rain, but this last we regard as a trivial matter in comparison with our troubles with algae, and the problem that has confronted us has been not merely the removal of mud, algae, and foreign substances, but especially the removal of odors.

Our experience leads us to believe that deodorizing cannot be done by filtration alone, and that aeration must be relied on for this purpose.

We believe we have succeeded in this object in a simple inexpensive way, and after three years' experience we cannot think of any change to be made in the theory or plans on which we have worked except possibly to enlarge and carry the ideas still further.

We use mechanical filters of the type known as the "gravity filter." We adopted this style because it is open to inspection the same as a filter bed, or even more so, and because the rate of filtration like that of a filter bed is dependent on the head of water and the filtering area. It also has the merit of being open, and affording an opportunity for the escape of all gases and odors, and entirely prevents carrying air into the water mains and the formation of air pockets.

The pressure filters (so called) seem to me to be based on faulty theories.

First.—The resistance must increase as the film on the surface of the sand thickens, and an ever growing and uncertain pressure must be maintained to force the water through. This means not only decreased efficiency of filtration, but also increased coal bills.

Second.—Pressure tanks are usually of iron, and however dilute the coagulant used may be, yet if alum or sulphate of albumina is used, the result must be to corrode the iron of which the tanks are made.

Third.—There is no opportunity for aeration or for any gases or air to escape. Whatever air or gas goes into a pressure filter must appear in the mains in the shape of air pockets, or escape at the faucets where delivered to the customers, sometimes much to the annoyance of the customers' olfactories.

For the above named reasons we have adopted the "Gravity" filters at Lexington, and contend that there is no result which it is possible to attain by the use of filter beds that we cannot attain by their use. There is certainly some number (more or less) of gravity filters which will produce the same result as so many acres (more or less) of filter beds, and if the original number of filters is not sufficient it is an easy matter to add to the number.

The use of a coagulant very much increases the safe rate at which water may be filtered. The film which forms on the surface of the filtering material and which is so effective in thorough filtration forms rapidly when a coagulant is used, and slowly when it is not. There is, therefore, little or no lost time with a mechanical filter as compared with a filter bed.

Still there are limits which cannot be safely exceeded with any filter whatever, and I am inclined to think that in many cases the same as with filter beds, too much has been expected from too little area, and that manufacturers of mechanical filters and their customers also, from motives of economy have endeavored to get along with too small a filtering surface.

There is no reason that I can see why sand in a filter tank will not do all it will do in a filter bed, and such additional amount as is due to the use of coagulants, and the shorter time lost in cleaning.

But there are some advantages to be derived from the use of mechanical filters which should be taken into account. Among these are economy of space and also original cost and the substitution of machinery for manual labor. Why should a week be spent in cleaning when a few hours with suitable machinery would suffice. Again the mechanical filter offers facilities for sterilization by live steam and for thorough cleansing of the sand used by washings which do not seem practicable with a filter bed.

The special features of our own plant and which we think the principal cause of such success as we have had in filtration and especially in the removal of odors are the thorough aeration given to the water and the mode in which we add the coagulant.

We aerate by letting the water fall in a spray of about 1,600 fine jets through a perforated pipe, a distance of about seven feet to the filter below. After passing through the filters it passes through a charcoal vat with a perforated bottom and again falls in a spray to the clear-water basin.

This simple method of aerating has been quite effective and has entirely removed all odors. We have an air compressor in reserve which was originally designed to aerate by blowing sprays of air through the sprays of water, but so far we have had no occasion to use it, the aeration by spraying through the air being sufficient and saving the cost of running the compressor.

The depth of sand in our filters is 30 inches and the annual loss about six inches. We use white sand (Horn Island) which we get from New Orleans at a cost of a little over a dollar a barrel, making our annual expense for sand about one hundred dollars. The upper six inches of sand seems to do all the work and it is seldom it is stained below that depth. We wash from four to five times in twenty-four hours in hot weather, and use water quite freely in so doing, as none of it is lost, but all gets back to the reservoir after a settling and straining process.

We have experimented with sand and crushed quartz of various degrees of fineness, but have found little or no difference in the results; the film or coating which rapidly forms on the surface of the sand seeming to do the work about the same in either case.

We have also experimented with settling basins with a view of taking part of the work off the filters, but found it impracticable, for the reason that the algae and vegetable matter with which we have to contend, is so light

*Paper read at the American Water Works Convention. Jewell Gravity Filters are used at Lexington. They are made by the New York Filter Mfg. Co., 26 Cortlandt St., New York.

that it will not settle, but floats or remains in suspension, leaving us no alternative but to let the filters do all the work.

As regards the use of a coagulant I think much of its effectiveness depends upon how it is used and I cannot I think do better than quote from my former report.

"We have a little simple device somewhat on the principle of an injector worked by the rock shaft of our low service pump and worked automatically, which at every stroke of the piston injects a fixed and invariable amount of the solution. It is only necessary to vary the strength of this solution from day to day, or even from hour to hour, if necessary, and it needs no further attention. The results are perfectly uniform; it requires much less coagulant; and is positive and certain, irrespective of variations in pressure or speed."

The sulphate of alumina which we use as a coagulant varies in amount from a minimum of one-third of a grain per gallon to a maximum of one grain per gallon, varying with the condition of the water and the season, and will not average more than eight-tenths of a grain per gallon for the entire year. This small amount (small when the character of our water is considered) we attribute to our mode of injecting the coagulant by which we can vary from one grain per gallon to the thousandth of a grain with the utmost accuracy and regularity.

I estimate the cost of filtration and aeration at $6 per million gallons exclusive of interest on the cost of the plant, which was $27,000, but this is for an output of only a million and a half gallons per day. Better results should be obtained where the filtering is done on a larger scale, and where the cheaper coal can be obtained. I have figured the coal at $2 per ton.

The small output of one and one-half million gallons per day in a city the size of Lexington is accounted for by the fact that 95 per cent. of our taps are metered, and there is therefore no waste. In this connection I may remark that meters and filters properly go together, and should not be separated.

With regard to typhoid fever statistics, to which so much importance seems to be attached lately, we have no reliable data in Lexington, but this much at least we do know—that whatever cases there have been, were attributable to the use of wells and other sources of supply. In thirteen years there has not been one solitary case of typhoid fever, or any other disease which could be traced to the use of reservoir water. Such a charge has never been made against it.

There are some other matters which we think increase the efficiency of our filtration, to which I will briefly call attention.

First—All our filtered water is stored in a clear-water basin and is carefully excluded from the light and from any possible contamination from germs being blown into it. We find in our warm climate that any exposure to air and light results very quickly in what almost seems to be spontaneous generation.

Second—We provide at the lowest points in our mains, openings which we call "washouts" and through which we flush and completely empty the pipes at intervals during the hot weather. By opening and closing the proper valves, and putting on pressure at the pumphouse we can scour out almost any line at pleasure, refilling, of course, with fresh water. These "washouts" are much more effective than hydrants for flushing purposes, the discharge being directly from the main instead of from a point three or four feet above it.

The results thus far have been quite satisfactory to ourselves and customers. We have had almost no complaint whatever of the equality of the water since the installation of our filter plant, while before that time complaints were frequent.

I have brought with me a sketch of our coagulant injector and samples of our water before and after filtration, which I will be pleased to show to any one or give any information in my power. I will also be glad to welcome at Lexington any members of the association who desire to make a personal inspection of our plant.

HISTORY OF THE SOLUTION OF THE WIRE PROBLEM IN BOSTON.

BY CAPTAIN WILLIAM BROPHY, BOSTON.

The stranger who visits Boston for the first time, upon reaching the business district, cannot help noticing two very remarkable features of that section of our city, viz.: That the streets are narrow and extremely crooked. Washington street, which is our principal business thoroughfare, is so narrow between Milk street and Adams square that there is room for but one street car track, the second or north-bound track making a detour through Milk street, Post Office square, Congress, State and Devonshire streets and Adams square to Washington street again. From Adams square to Dover street there is barely room for the passage of a single vehicle between the passing street cars and the curbstones. This statement applies with equal force to most of the streets within the business portion of the city.

To those who come here from other cities in the United States where the streets are of ample width and laid out with perfect regularity, our narrow winding ways (by courtesy called streets, where many of them should be classed as alleys), are a source of surprise, and they wonder what rule or plan was followed by those who first laid them out. No doubt a search of the early records would throw some light on this matter. Most people prefer to accept one of the following legends: That the early settlers located their dwellings according to the dictates of their own fancy and then built the streets so as to pass the front door of each, thus reversing the present order of things. The other, which seems to be accepted by most people as the correct one, is that the cattle when turned out to pasture where now stand stores, warehouses and sky-scraping office buildings, cropped the tufts of grass where they grew sparsely in spots thus forming beaten paths on which were built the dwellings of the owners of these bovine surveyors, who unconsciously ran the lines of many streets of the modern Athens without the aid of the level or transit. It is also said that the width of those streets was determined by the distance over which conversation could be carried on by the occupants of the dwellings on either side without overtaxing their lung power, thus enabling the worthy dames to indulge in their daily village gossip and at the same time attend to their domestic duties.

Previous to 1890 were a stranger unacquainted with electrical matters to be taken to the top of one of our high buildings, when his eyes rested on the tall towering structures rising from every roof with millions of wires connecting them, he would naturally assume that Boston must be visited quite frequently by hurricanes of sufficient force to blow away any one of our buildings, and in order to prevent such a catastrophe they were bound together by these ties because "in union there is strength," and their combined weight woud be sufficient to resist the onsaught of "Old Boreas," while without such iron bonds individual buildings might be swept from their foundations.

Electrical men who visited us at that time at first expressed their surprise at the absence of poles and wires from the streets within the business center, and were apt to think we were slow in adopting the electrical inven-

tions and improvements that were in general use at that time; but after they had lost their way while walking through our narrow serpentine streets, or tried to elbow through the narrow sidewalks on Washington street between Kneeland and State streets during the busy shopping hours, they realized that there was no room for poles for the support of electric wires in the streets of the business portions of Boston; but when they cast their eyes heavenward, or looked out over the roofs from the windows of their rooms situated in the top stories of some of our hotels, they soon realized that the "Hub of the Universe," instead of being behind the times electrically, was then, as it is now, far in advance thereof. Practically all the electrical energy produced previous to 1894 was transmitted over wires supported on the housetops within this portion of the city.

The question may be asked why did the owners of the buildings submit to the occupation of their property for this purpose. The reasons were many, the principal one being that it was necessary, but the means adopted by the owners of electric wires to obtain a foothold on the housetops varied with circumstances, the temper of the owners, their ignorance of their rights, or their ability to assert them.

Previous to the introduction of the telephone exchanges the amount of wire on the roofs was very small and caused very little inconvenience to the owners or occupants, nor did they prove a very serious obstruction to the operations of the fire department, but after they were established roof privileges were soon at a premium and most of the owners exacted compensation either in the form of a fixed rental or an agreement to keep the roofs in repair, one or both, usually both. This plan applied to buildings on which were erected large structures; thousands of wires were attached to roofs without the knowledge or consent of the owners. The expedients resorted to by the linemen of the different companies to attach a wire or wires to roofs without the knowledge of an obdurate owner were numerous and many of them ingenious. The telephone and electric light companies secured rights on conditions satisfactory to the owners, usually to the exclusion of all others; but in many cases the fertile brain of the employes of other purveyors of electrical energy rendered such exclusive privileges of little value to those who obtained them. The owners of substantial structures soon found them occupied by wires of all kinds whose owners were to them unknown, and as a result the bare iron wires which carried but a very small amount of electrical energy nestled close to their more powerful brothers, the electric light and power conductors.

While the larger companies, having obtained control of the roofs and erected structures thereon, ran their wires systematically, they soon found that all their efforts were rendered fruitless by the action of others, who would attach wires to the walls, chimneys and fixtures in the most slipshod manner; many of these would be but a few inches above the roofs or fastened to the underside of crossarms that were already carrying as many wires as they should. Trunk lines crossed each other or were crossed by single wires with scarcely any space intervening; as a result slight winds and snowstorms caused a pretty general mixup of all kinds of wires, resulting in a large number of small fires and occasional accidents, but as there was no system of investigating them, no correct statement of their number can be made at this time.

On Thursday, November 28 (Thanksgiving Day), 1889, a fire started in the upper portion of the building situated on the corner of Kingston and Bedford streets. The alarm was given at 8.15 A. M., followed quickly by a second and a third. The fire spread rapidly and was not subdued until twenty buildings were destroyed and over 100 firms burned out. The assessed valuation of the buildings destroyed was $1,000,000, and the total loss $5,000,000. The amount of ground burned over was two and one-half acres. Two engines and one ladder truck, one water tower and a large amount of hose, the total value of which was $20,000, and worst of all the lives of five firemen were sacrificed. In addition to the Boston fire department assistance was asked and rendered by all the cities and towns within a reasonable distance and it required the combined efforts of all this force to stay the progress of the flames.

As it was a holiday the building was closed, and the watchman and janitor both being absent and no person being in it, the fire gained much headway before it was discovered. The origin of the fire was to some extent shrouded in mystery, but the generally accepted theory is that it started in the rooms occupied by an electric time company situated in the upper portion of the building, caused by the crossing of one of their wires and those of an electric power circuit, the abnormal flow of current over this wire burning the insulation of the fine wire on the magnets and possibly that of the office wire and setting fire to a wooden partition and finally enveloping the interior of the building in flames, which were discovered by passersby. As the magnets in several of these electric clocks on one of the circuits were burned out a short time before the discovery of the fire, and as a cross between this circuit and an electric power circuit was found about one-third of a mile from the scene of the fire, it is assumed that its origin was due to electricity, or more properly speaking, to the wretched condition of the overhead electric wires on the housetops of the city of Boston at that time.

When the public became aware of the fact that electricity was the probable cause of a conflagration that might have equalled in magnitude the great one of December, 1872, an agitation was inaugurated for municipal control of electric wires, apparatus and appliances. The mayor of the city was the leader in this movement, and he enlisted the aid of all those engaged in the electrical business, including the author of this article, together with the fire underwriters, in securing the passage of a law to secure this much desired end.

The result of this agitation was the passage of a law entitled, "An Act Relating to the Regulation and Supervision of Wires Over Streets or Buildings in Cities." This act compelled the owners of electric wires to "use only those that were suitable and strong and suitably and safely attach them to suitable, strong and sufficient supports," and to "insulate them at all points of attachment," and "to remove all wires abandoned for use;" the "owners of all wires other than those designed to carry an electric light or power current" were obliged to "insert at suitable points in the circuits where the same entered buildings, a suitable device designed to prevent at all times a current of electricity of such intensity and volume as to be capable of injuring electrical instruments or causing a fire in the building by means of such wire, beyond the point at which such appliance is attached, and shall suitably insulate every wire within a building when such wire is designed to carry an electric light current."

The appointment of an officer to supervise all electric wires and enforce the provisions of this act was made mandatory on all cities in the state, and the owners of all wires were required "to affix at all supports, where such wires or cables containing wires were attached a tag or mark designating the owner or user of such wire or cable;" the wires and cables of street railway companies used for the transmission of their motive power were exempt from this clause. The law contained no penalty for non-compliance with its provisions, but the inspector

or supervisor could apply to the justice of any court, in term or vacation, to enable him to enforce the provisions thereof.

It will be noticed that the lesson learned by the great Thanksgiving Day fire runs through this entire act, great stress being laid on the insertion of safety devices in all low tension wires, and the attachment of the names of the owners and users thereto, while many other provisions that might have been inserted were left out.

Boston was the first to comply with the provisions of this act by appointing an inspector of wires and organizing a department for their supervision. The least unkind thing that can be said of the first and only incumbent of that office is that his appointment was very unfortunate, and a great disappointment for all those who earnestly desired an improvement in all kinds of electrical construction. As might be expected the organization of the department was equally unsatisfactory and disappointing, and as a result its work was done in a most perfunctory manner. The absence of a penalty from the law seemed to be a sufficient cause to deter this official from demanding or enforcing (when necessary) compliance with its provisions; added to this was a total lack of experience with high potential work by the inspector of wires, and, with a few exceptions, the same could be said of his subordinates.

The experience of the writer with those engaged in the electrical business impells him to say that with the exception of the "snide contractor," "electrical pirate," or ignorant novice, no law or penalties prescribed thereby had to be invoked to compel them to comply with any reasonable requirements looking to the safety of the public, and incidentally to the benefit of themselves from a business standpoint.

It can be truthfully said that from the passage of the law of 1890 no perceptible change for the better was made in the condition of the wires in the city of Boston until 1894. Order was not brought out of chaos, and little or nothing could be shown for the money expended for the supervision of wires. There is an old saying that "it is an ill wind that blows no good," and the failure of our first attempt to supervise electric wires resulted in the passage of the act of 1894 creating the "Wire Department," in which was vested all the powers and duties of its predecessor and the added one of removing all overhead wires from the streets and highways of this city. This act provided for the appointment of a commissioner of wires, whose duty it was to enforce the provisions of the acts of 1890 and 1894. This latter act provided that all overhead wires within the territory of Dover and Berkeley streets (not including Charlestown and South Boston) should be removed and placed underground previous to the year 1900; not more than one-fourth nor less than one-sixth of the total area of this territory was to be cleared of wires, poles and fixtures during each calendar year. Under the provisions of this act the owners of overhead wires were obliged to construct their own electrical subways, the city merely providing the location and supervision of the work. To the city or a private corporation was not given the exclusive privilege of building electrical subways to be rented by corporations and individuals at a fair or exorbitant price, as circumstances might permit.

Some of the provisions of the act of 1894 are as follows:

"It is the duty of the commissioner of wires, and he has the exclusive authority to cause to be removed from the streets of the city within the section hereinafter prescribed, or from above said streets, all wires, cables and conductors, and all poles and structures for their support, and to cause all such wires, cables and conductors to be placed and operated under ground. He has also general supervision and inspection of all wires, cables and conductors in said city."

"He must in the month of January of each year until the work is completed, prescribe a portion of the underground district, the area of which shall not exceed one-fourth or less than one-sixth of the total area of the same, and give public notice thereof."

"After such portion of said section shall have been prescribed no poles, structures or wires can be placed therein, except temporarily in case of an emergency, and with the consent of the commissioner. If at the expiration of the calendar year there shall remain any wires, poles or structures, he can cause them to be removed."

It is obligatory upon those desiring to place wires underground to "file with the commissioner of wires maps drawn to scale showing the streets, avenues, etc., which they desire to use for such purposes."

Whenever it is deemed impracticable or inexpedient for electric wires to be placed or operated underground, the commissioner can grant permission to deviate from the underground system. He has the general supervision of all poles, wires, etc., and all interior wires within the city limits.

"In case of the neglect or refusal of any one to comply with any requirements made by the commissioner under authority of the act he can proceed to abate or remove in a summary manner any danger which he deems likely to result."

"Long distance telephone wires and those of street railway trolley, guard and span wires, or posts used exclusively for the support of lamps or those used exclusively for local distribution from underground wires are exempt from the provisions of this act."

There is a board of appeal to whom corporations or persons aggrieved by the action of the commissioner may apply for redress, but up to the present time no such appeal has been made; nor has it been found necessary to take summary measures to enforce compliance with the law or rules of this department.

The first underground conduits laid in Boston were put down on October 16th, 1892, and work on same completed on November 17 of the same year, by the New England Telephone & Telegraph Company. They consisted of 3-inch wrough iron pipes, laid in cement, in the following streets: Pearl between Franklin and Congress streets, eight ducts; Congress between Pearl and State streets, eight ducts; Franklin between Pearl and Devonshire streets, six ducts; Franklin between Devonshire and Washington streets, four ducts. The cables, which were lead covered, the insulation on the wires contained therein being of cotton filled with paraffine, were not drawn in until the spring of 1893.

This was the beginning of the underground system of electrical wires and conduits in Boston. This company continued the good work to such an extent that in 1894, when the wire department was organized, 80 per cent. of their wires within the prescribed or underground district were under the surface of the street. This policy was an exceedingly wise one, and were it not for this voluntary action on the part of this company our condition electrically would have been very much worse and the chances for an extensive conflagration greatly increased. This company has not only placed the balance of their wires within the prescribed district underground, but it has done a large amount of work outside the limits thereof; the same can be said of the Boston Elevated Railway Company and some others.

The next electrical subway was constructed by the Western Union Telegraph Company through Friend street in 1894, the ducts being 3-inch wrought iron pipe. These pipes were not laid in cement or concrete. The cables were not lead covered and the insulation of the

wires contained therein was rubber. The immediate cause for placing these wires underground was due to a vigorous protest against the erection of a very heavy line of poles through this narrow street to enable this company to reach the northern depots and lines of railroads.

The Edison Electric Illuminating Company built its first electric light and power station on Head place in 1886 and used the well-known Edison solid tube system. While most of this company's wires were from the first placed underground, yet it had a large number overhead, but before the organization of the wire department all these had been removed and placed beneath the surface of the streets. This company was then, as it is now, the only one that could say it had no overhead wires in any part of the city of Boston.

The selection of the first commissioner of wires was an exceedingly happy one in every respect, for while he fully realized the importance and magnitude of the work entrusted to his charge and knew that he had ample powers under the law to enforce its provisions, he also realized that the companies and individuals owning the overhead systems of electrical transmission had rights that should be respected, and in replacing this system, which represented very large investments of capital, which was to be wiped out of existence, he felt that their convenience, financial condition and ability to perform the work should have due consideration. To this policy is due the fact that this work has gone steadily on without a single interruption, without the slightest friction, and without a single decision of the commissioner being carried before the board of appeal for reversal.

When the first commissioner of wires was called by His Honer, Mayor Quincy, to occupy what is considered by many a more responsible position, it was feared by many that his successor might prove less efficient, less considerate of those under his supervision, and possibly less mindful of the rights and interests of the citizens. Happily, all who thought so were doomed to disappointment; the same policy adopted at the start has been carried out to the letter, and where it could be has been improved on.

The wire department was organized and commenced operations in August, 1894; all the working force of the department of inspection of wires was transferred to it and a force sufficient for the underground work added thereto. The first commissioner was John R. Murphy, who organized the department and continued at its head until February, 1896, when he was replaced by Thomas W. Flood, who is the present commissioner.

Upon assuming the duties of this new position, Commissioner Murphy at once infused new life into the inspection of wires department, which comprises the overhead and interior divisions, and organized the underground division. The standard of overhead and interior work was quickly raised and maintained, and it is the proud boast of the department to-day that no fires due to electrical causes have occurred in buildings containing wires and appliances that have had its approval. While it seemed a severe burden on the owners of overhead wires that were destined to come down within from one to five years, yet it was done at the request of the department and within a reasonable time; those within the prescribed district were first attended to and made as safe as possible; as they began to disappear those outside this district received attention and their condition greatly improved. If some of the cumbersome and obsolete laws that are now on the statute book governing the erection and maintenance of poles and wires were repealed, the work of this division would be of much greater value and the danger and annoyance to the public greatly lessened.

Though the construction of the underground conduits was not entirely new to Boston, yet the condition of our narrow streets and the amount of travel through them rendered such construction a somewhat difficult problem to be solved, but the task was undertaken and is now practically completed.

The existing maps did not in all cases give accurate or even approximately accurate data as to what was under the surface of the streets, and as contact with gas, water, steam or other pipes had to be scrupuously avoided, it was often a difficult task to find a suitable resting place for the new-comers among the old tenants that had rested so long under our feet; the wooden water pipes, stone culverts, and even the sacred resting places of the dead were found in the most unexpected places during the progress of this work. In many cases both ducts and manholes had to be placed under the sidewalks. To add still more to our difficulties came the subway, extending through the business portion of the city under the streets, the roof of which comes within a few inches of the surface, thus reducing the limited space in which wires could be placed.

As before stated, the owners of overhead wires built their own conduits, the city giving them the use of the streets designated by the commissioner of wires, and the style and standard of conduit and method of construction is determined by the wire department, which supervises and approves the work when completed. Companies and individuals who, alone, could not afford to construct conduits, combined, and did so jointly. The city owns none of the conduits, except the subsidiary or service ducts used by the fire and police signal system. All the citizens asked was the removal of that which menaced their lives and property; they did not seek to derive a revenue therefrom, which no doubt would be absorbed in its collection. The task first assigned to the wire department is now nearly completed and the work in the new territory, which includes the entire city, will commence in the first year of the new century.

Thus far the underground system has proved a success, a great benefit to the companies owning and operating it, and a blessing to the community; this was proven beyond a doubt during the blizzard of February 1st of this year, when the entire overhead system of wires was completely wrecked and rendered useless for weeks, and not all restored until quite recently. During this storm the value of the safety devices placed in low potential circuits was fully demonstrated, they having prevented hundreds of fires that would be sure to have occurred during this fearful mix-up of electric wires.

It is not my purpose to give a description of the underground system of electric conduits in Boston, as they do not differ materially from those in New York, Chicago and other cities, but a few figures may be of interest to the reader.

The main ducts are plain wrought iron pipe, cement-lined, sheet-iron pipe and vitrified clay; the service ducts are wrought iron pipe; all with the exception of the wrought iron pipe are laid in concrete. The manholes are of brick laid in cement, having cast iron covers.

The amount of electrical subway completed on February 1, 1898, was 645,537 feet; ducts, 3,733,809 feet; cable drawn in, 4,006,497 feet; single conductors in cables, 216,110,089 feet; number of service connections, 6,387; number of manholes built, 2,920. The amount of wire removed from poles was 2,280,150 feet; from fixtures, 12,288,600 feet; street railway feeders, 299,120 feet; guard and span wires, 321,000 feet; poles removed, 1,520; fixtures removed, 4,199.

In accordance with the terms of the act of 1894, creating the wire department, its work would be com-

pleted on the first day of January, 1900, and it would then have gone out of existence were it not for the fact that at the present session of the Legislature the act of 1894 was so amended that its work is extended over a period of ten years, or until 1910. Instead of confining the underground district to one certain section it will include the whole city, the commissioner being empowered to clear such streets or portions thereof as in his judgment seems best. His authority in other directions has been greatly increased, which change will no doubt redound to the benefit of the people and cause no hardship to those who are engaged in the generation and transmission of electricity.

ACME AUTOMATIC SEWER TRAPS.

A device which requires but little explanation for the plumber to understand its value is manufactured in various forms by the Acme Automatic Sewer Trap Company, of 63 Gold street, New York. It provides a mechanical seal in drain pipes and traps to prevent sewer gas passing into a building. It is claimed that the device is sufficient to attain this end without the use of a trap with a water seal as is commonly used. In order to meet the requirements of the trade, however, the goods are manufactured so that they can be used in connection with the usual traps or independent of them, as may be desired. The device, as designed for use independently of a water seal trap on horizontal pipe, is shown in Fig. 1, and consists of a sliding diaphragm of non-corrosive metal which serves as a seat for the flap or valve, also made of a different non-corrosive metal of such a nature that a tight seal is said to be readily made and one of a lasting nature. On removing this diaphragm through the hand hole provided for the purpose and turning it upside down the tightness of the valve may be seen by pouring water into it, when no leak at any point of the valve seat will be found. The advantage of being able to remove the valve and its seat is readily apparent to all who have ever had occasion to remove obstructions from drain pipes. In the form shown in Fig. 1 it is adapted for use in connection with the running trap at the front wall of buildings where there is already a plumbing system, when it serves as a protection against the entrance of sewer gas in the house in addition to the water seal in the running trap. It also has the advantage of being a perfect back water trap, so that in case of sewers being flooded there is no danger of the sewer water penetrating to building along the line of the sewer. Fig. 2 shows a running trap in which an automatic trap is introduced so that the advantage of a water seal and a mechanical seal are secured in one fixture at a very small additional cost. In Fig. 3 the automatic trap is shown in connection with the trap adapted for use under basins, sinks or any of the fixtures ordinarily found in a house. One feature of the trap to which the manufacturers call special attention is its efficiency in houses which are closed during a portion of the year, when the water in the trap must soon evaporate and permit a free entrance of the gases and germs that may be found in the sewer. With the Acme automatic trap and its mechanical seal, it is claimed that the water seal may evaporate and the building be kept in a sanitary condition. These traps have been thoroughly tested by city officials in the vicinity of New York, and have secured the recommendation of several health boards and officials. Pamphlets giving information and prices and diagrams showing the sizes and dimensions can be secured on application.

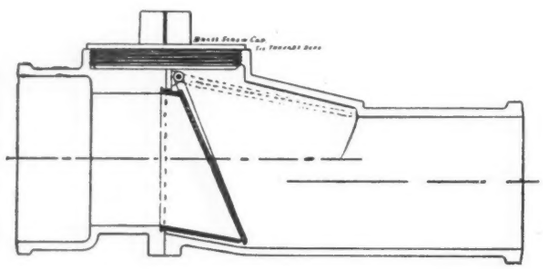

FIG. 1.—SECTIONAL VIEW OF INDEPENDENT TRAP.

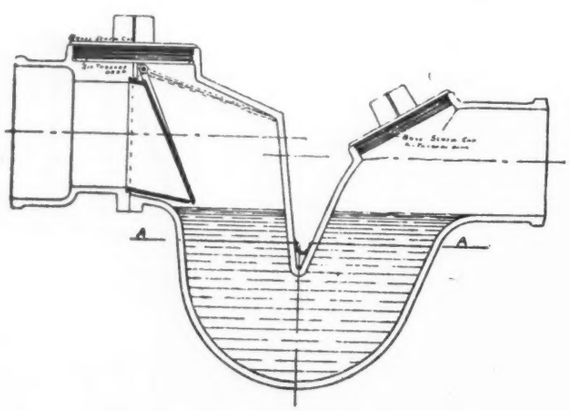

FIG. 2.—COMBINED WITH A RUNNING DRAIN TRAP.

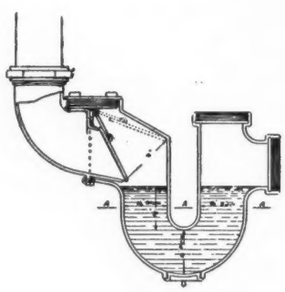

FIG. 3.—SHOWING ADAPTATION FOR USE UNDER PLUMBING FIXTURES.

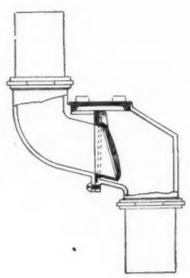

FIG. 4.—ICE BOX TRAP.

ELECTRICIANS TO MEET.

The International Association of Fire and Police Telegraph Superintendents and Municipal Electricians will hold their annual convention in Elmira, N. Y., on August 9 and 10. Great preparations are being made by the executive board of this organization for one of the best and most instructive electrical conventions that has ever been held. Papers on important subjects will be read by the brightest lights in the profession. No man holding a position in the electrical department of a city can afford to miss this meeting, and all mayors and commissioners should attend, that they may become acquainted with these important branches of their respective cities, for which they are responsible. Many of the members will be accompanied by their wives, and special arrangements have been made for the entertainment of the ladies. President Will Y. Ellet, of Elmira, will be pleased to furnish all particulars regarding the convention to those who are interested.

FIRE CHIEFS' CONVENTION.

The twenty-sixth annual convenaion of the International Association of Fire Engineers ill be held at St. Louis, Mo., October 18 to 21, inclusive. That the meeting will be one of the most successful in the history of the organization is assured by the interest that is already shown in the event. Fire department people in all sections of the country are arranging their affairs so as to make the journey to St. Louis and the attendance will be extremely large. Secretary Hills has sent out the programme from which it is seen that the discussions of the various important topics are to be led by such eminent authorities as Chief Roberts, of Denver; Chief Hale, of Kansas City; Chief Swingley, of St. Louis; Chief Devine, of Salt Lake City, and Chief Dickinson, of Cleveland. Special papers are to be prepared by Capt. William Brophy, chief electrician of the wire department of Boston; Capt. William McDevitt, inspector of the insurance patrol of Philadelphia, and E. S. Loring, consulting architect, Syracuse. The second day of the convention will be reserved for exhibitors to display their various articles and improvements in fire apparatus.

MAINTENANCE CLAUSE VALID.

A decision was handed down by the St. Louis Court of Appeals June 21 in the case of the Barber Asphalt Paving Company against Morris Hezel and others. The suit has been before the courts for a long time and has attracted much attention on account of its provisions for the paving of streets and their maintenance by the contractor for a specified time. The decision of the Circuit Court is reversed and the case remanded for a new trial. The opinion was written by Judge Bland. The suit was brought by the Barber Company against Morris Hezel and others on special tax bills for paving a portion of Jefferson avenue.

The main defense was that the letting for work and for maintenance was all in one letting and one contract, thereby putting the cost maintenance on the property, which is contrary to the charter. Another defense was that the board named the Barber Company as the only bidder and shut out all competition.

With respect to the latter clause the court held that it was not well taken, as the board of public improvements had the right to reject all bids. It holds that the maintenance may be considered a continuance of the original contract to construct the street, and is necessarily a part of it owing to the peculiar character of the paving, or it may be considered a guarantee that the paving will be maintained.

Judge Valliant declared the tax bills invalid when the case was heard before him, but Judge Bland reverses him and remands the case to the Circuit Court for a new trial.

COMPETITION IN PAVING CONTRACTS.

While "The News" has regarded the municipal conditions of Philadelphia as among the worst in the country, still an occasional lesson can be drawn from there with profit to Baltimore. The same paving monopoly that operated in this city through the old Democratic ring did business in Philadelphia through the Republican combine, and in both places the cost of paving was greatly increased through the absence of competition.

A few years ago, when some reforms were instituted in the paving ordinances passed by our Mayor and City Council, prices began to drop, and we were enabled to secure more paving at less cost. This was done by the application of honest business methods. In Philadelphia, Director T. M. Thompson, of the department of public works, has just issued a statement in which he shows that the prices of improved pavements have fallen off considerably of late, without any apparent deterioration in the quality of the work. Where the city formerly secured a guarantee of three years, it now receives five years on new paving and ten years on repaving. Contracts for asphalt have been awarded as low as $1.20 and $1.30 a square yard, and for granite blocks at $2.34 instead of $2.75 to $3.25 a square yard, the former prices. This reduction, Director Thompson says, is due to the present policy of free competition in paving contracts. All of which goes to show that it pays to do things on business principles.—Baltimore News.

FIRE DEPARTMENT NOTES.

—The council of Princeton, Ind., will put in a Gamewell fire alarm system with fifteen boxes and a tower alarm.

—Hereafter Montgomery, Ala., will have a paid fire department. The ordinance providing for its establishment was recently passed by the council.

—The directors of the New Jersey State Exempt Firemen's Association have purchased the William G. Lathrop property at Boonton and will convert it into a home for aged and disabled firemen. The purchase price was $36,000, and about $9,000 will be spent for alterations and furnishings. The house is 100 feet front by 80 feet deep, with three stories, basement, attic and mansard roof.

—The convention and tournament of the New York State Firemen's Association will be held at Binghamton, August 16, 17, 18 and 19. The local committee has ar-

ranged a most attractive programme of entertainment, and the purses offered are large enough to insure a brilliant and inspiring series of contests. On the last day of the convention there will be a band contest, the winner to receive a purse of $300 and the second band $200.

—Augustus T. Docharty, secretary of the New York fire department, recently wrote the Monarch Fire Appliance Company, of this city, as follows: "I am directed by the commissioner to notify you that upon recommendation of the chief of department he has authorized the expenditure of the appropriation for the purchase of Kilfyre extinguishers for this department." This was very gratifying to the company, who report a rapid growth in the demand for "Kilfyre."

—The American Fire Engine Co., of Seneca Falls, N. Y., have just issued a booklet containing a full description and illustrations of their latest product, the Metropolitan fire engine. Its construction embodies the newest ideas of the most experienced designers, and the tests to which it has been successfully subjected justify the assertion that it represents the highest achievement in fire-engine building. The Fox water tube boiler and the improved American pump are the most important component parts of the engine.

—A serious collision between a chemical engine and a hose wagon at Scranton, Pa., last May, has resulted in the preparation of running rules for the fire department of that city. In responding to alarms a special route is given to each company, and the routes are so arranged that each company responding will reach the box by a different route. Another important rule has been framed regarding the exercise of horses. It is said that some of the permanent men exercised their horses whenever they felt so disposed and took them along routes that struck their fancy at the time. This has been changed and in future the men will take the horses out at certain prescribed hours and at no other time, and will also confine themselves to the block in which the engine house is situated.

WATER DEPARTMENT NEWS.

—From January 1, 1898, to July 1, 1898, the Thomson Meter Company sold 11,496 meters, which was 2,595 more than they sold during the corresponding six months of 1897. This certainly is the best kind of evidence of the worth and popularity of the Thomson meters.

—The new officers of the American Water Works Association are: President, J. A. Bond, Wilmington, Del.; vice-presidents, William R. Hill, Syracuse, N. Y.; C. P. Allen, Denver, Col.; L. N. Case, Detroit, Mich.; R. M. Clayton, Atlanta, Ga.; John P. Heim, Madison, Wis.; secretary and treasurer, Peter Milne, New York.

—Here is a significant excerpt from the annual report of City Engineer Benzenberg, of Milwaukee: "The total water supplied to consumers during 1897, after an extremely liberal deduction of 1,736,697,738 gallons for water used by the city for all city purposes and for possi-

ble leakage, amounted to 6,589,805,258 gallons, of which amount 2,400,596,250 gallons were supplied through 19,293 meters and registered by 224 hydraulic elevator indicators, while the balance of 4,189,209,008 gallons were supplied through 8,546 taps to unmetered consumers, and for which amount these paid but little more than half what was paid for the measured or metered volume of water."

—A special committee of the Louisiana legislature is now investigating charges made by citizens against the New Orleans Water Works Company. It is alleged that the rates of the company are much higher than its charter allows; that the company has paid dividends with borrowed money; that it has not supplied pure and wholesome water; that it has not extended the works to meet the growth of the city; that it has excluded from representation on its board of directors, contrary to the provisions of the law; that it has not maintained the pressure necessary for proper fire protection, and that its management has been expensive. The legislative committee promises to investigate these charges thoroughly and its report will doubtless be interesting.

PUBLIC LIGHTING.

—Mayor Johnson, of Fargo, N. D., has vetoed the electric light franchise recently granted to Alexander and Edmund A. Hughes. The mayor insists upon providing for underground wires, more liberal extension provisions and a reduction of the rate per 1,000 watts from 20 to 15 cents.

—The contract for electric lighting of the parks of Baltimore, Md., has been let to the Northern Electric Co., the only bidder. The bid was for arc lamps burning all night, 25 cents a lamp a night; burning until half hour before sunrise from midnight, 20 cents a lamp, and burning from dark until midnight, 15 cents a lamp; for incandescent lamps, 50-candle power, $3.50 a lamp a month, and 32-candle power, $1.85 a lamp a month.

—In San Francisco, the Mutual Electric Light Company has brought suit against Mayor Phelan and the board of supervisors for the purpose of annulling the contract recently let by the city to the San Francisco Gas and Electric Company. An affidavit filed by an officer of the Mutual Company declares that the contract has been let on a basis which is not competitive and which is at once unjust to his company and to the people. The notice given by the supervisors to bidders, he declares, was inadequate and illegal, the purpose being to give the Gas and Electric Company an undue advantage. He charges that the rate prescribed is double the price that is now charged private consumers for the same purpose.

TRADE NOTES.

—Americus, Ga., has ordered a full trussed frame truck with trussed ladders of Gleason & Bailey Manufacturing Company.

—New York city has awarded contracts to Gleason & Bailey Manufacturing Company for a large city hook and ladder truck, equipped with Seagrave patent trussed ladders.